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Map of Southwestern United States

My Life in the Valley of the Moon

GENERAL OF THE ARMY H. H. ARNOLD (RET.)

17 Natural Color Photographs

WILLARD R. CULVER

Masterpieces on Tour

With 6 Illustrations

23 German-owned Paintings

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The Curlew's Secret

With 5 Illustrations and 2 Maps

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Mapping Our Changing Southwest

With 8 Illustrations

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My Life in the Valley of the Moon

By GENERAL OF THE ARMY H. H. ARNOLD (RETIRED)

Formerly Commanding General of the U. S. Army Air Forces

With Illustrations by National Geographic Photographer Willard R. Culver

WORLD WAR II had ended. I was tired—quite ready to turn over the reins of air power to others—for I'd spent most of my adult life in airplanes.

So when reporters at a National Press Club luncheon asked me, "What are you going to do when you leave Washington?" I was ready to answer.

"I'm going out to my ranch, in California's Valley of the Moon," I said, "and sit under an oak tree. From there I'll look across the valley at the white-faced cattle. And if one of them even moves too fast, I'll look the other way."

"You mean you're through with airplanes?"

"Yes! If one dares fly low over my ranch house, I'll grab a rifle and try to shoot it down."

By chance, many news dispatches carried that wisecrack, which later was to bounce back on me!

Till we got settled on our ranch, we hadn't realized how calm and restful life could be, far from the din, hustle, and bustle of cities, far from all the talk I'd heard for years about flight training, airplane production, international conferences, armies, navies, and war.

We became just one more family of many families who live in this serene, picturesque Valley of the Moon, made famous by Jack London's writings (map, page 692). Our ranch is not large; but it's big enough to hold a fine house on a hillside (Plates II and III). Its patio furniture I made in my own workshop. The place is big enough for two dogs, a couple of horses, several hundred chickens, some dairy cattle, and a few Polled Herefords.

It wasn't our aim to go into the ranch business on a big scale. But we could, we found, make some money with milk cows, chickens and eggs, melons, vegetables—and hay.

"Chain Reaction" of Hay and Cattle

But we soon learned what every rancher knows about that endless chain—hay and cattle. It's like the hungry small boy—his jam and bread never come out even! Neither would our hay and cattle. More cattle, more hay; more hay, more cattle!

But that's no way to retire and rest, I figured. So, after an overnight decision, I took the bull by the horns, so to speak, and sold off all the dairy cattle.

I kept the Herefords—and the riddle, albeit a simpler one, of making hay and animals come out even.

Spaniards and Mexicans loved this valley and grazed their flocks and herds here generations ago. Their happy-go-lucky spirit of *mañana*, or never doing today what you can put off till tomorrow, still lingers.

We soon found it easy to slip into this serene way of delightful idleness. Everybody here likes to play, and the pioneer Spanish-Mexican fondness for fiestas still survives. How readily we took to it!

Particularly pleasant it is for my wife and me to sit in our redwood chairs, drink in the quiet beauty of our valley, and watch the half-tame quail feed about our garden.

How far away, on such calm, sunny afternoons, seem all the roar of four-motor bombers, the fiery flash of aerial battle, or even the wrangles of diplomacy.



This Adobe Wall Was Standing when California Was Mexican

Around 1836 Gen. Mariano G. Vallejo, Mexican military commander in northern California, built the house near Petaluma for watching the aggressive Russians (page 696). From their stout stockade at Fort Ross, the Muscovites sent trappers to hunt sea otters and agents to stir up the Indians. Other foreign powers made bids for California, but Vallejo coped with all save the Americans.

But suddenly, one startling day, this idyllic picture changed!

An Airplane "Possessed of the Devil"

With all of California—in fact, with the whole Pacific Ocean available to them—two pilots in separate planes had to pick the air just over our valley for their dogfight practice!

Worse yet, they picked the air right over our ranch! . . . Get out the machine gun, Garand rifle, carbine—anything that will shoot!

Round and round those two Air Force planes cavorted, perhaps to show a friend in the vicinity how good they were, perhaps to impress their former chief. Who knows?

The climax came more swiftly than anyone anticipated. The pilots were not so good as they thought they were; their flying precision did not equal their good ideas and intentions. As suddenly and as unexpectedly as those things happen, one plane flew too close to the other and cut its tail off!

How disconcerting to the most unabashed airman, to find himself in the air over the home of the erstwhile Commanding General of the Army Air Forces with no tail on his plane!

The plane that had done the damage, suffering itself from a damaged prop and landing gear, limped back to Hamilton Field, some 20 miles distant, and landed on its belly. The pilot was uninjured; there was no passenger.

The second pilot, the one of the tailless plane, bailed out, and floated with the wind to a golf course two miles away, where he landed unharmed.

But his plane! It acted like a thing possessed of the devil. It did none of those things a normal plane should

have done. Any aeronautical engineer or designer will tell you it is impossible for a plane to fly without a tail. But that one did! It maneuvered in circles of ever-decreasing size, always coming down closer and closer to our house.

Down, down, but always flying just as if it were spiraling normally. It came so close we knew it must hit the house, cover it with gasoline, and start the inevitable disastrous fire. But it missed the roof by inches!

Over the rose garden it went and out into the south pasture, where it crashed and exploded in a hole it had made in the ground some 30 feet across. Almost instantly it was

consumed in fire of great intensity. Nothing left but a mass of wreckage!

My conscience was clear. I had *not* shot it down! But would any of my Eastern friends believe me? Far too many letters were received shortly thereafter. "Well, I see you did it! What kind of gun did you use?"

Since then, no more airplanes!

The serenity of the Valley of the Moon is wonderful; so much so that this morning one of the men working on the place went up to the spring, saw what he thought was a jack rabbit's hind end, tried to grab its legs, and found it was a fawn! He saw the doe and another fawn, and then, almost too late, the buck, charging out of the bushes right at him.

He ducked behind a rock for safety, just in the nick of time. The buck shoved the two fawns into the brush with his horns, and the family disappeared.

Wildlife Neighbors and Bird Visitors

Why did we come to El Rancho Feliz?

I suppose, from a practical standpoint, chiefly because Sonoma is one of about three spots in the United States where my wife does not suffer acutely from hay fever.

But, apart from that, we would have come, anyway. Does one need further reason than a family of unafraid deer not more than a few hundred feet away from his back door; or three coveys of quail that come to the house to get feed and water, morning and night; or the dozens of hummingbirds, and many other species of birds, that come daily to the bird baths and to the dishes of tidbits that are always ready for them?*

Could one ask more than expansive horizons



The Author Plants a Baby Giant

"For about 40 years," writes General Arnold, "I have traveled to all kinds of places in many corners of the world. . . . When we came to selecting a place to settle, we chose the Valley of the Many Moons." This seedling came from the Spreckels estate a few miles from the Arnold ranch. "Come back in 2,000 years and I'll show you a giant redwood," says the retired air general.

of softly rolling wooded hills stretching away to blue-misted mountains (page 694); or the fascination of the valley itself—the colorful wool and warp of its history, its serene indifference to the driving, restless tempo of today, its charming devotion to the gracious living, the leisureliness, the romance of a yesteryear?

Sonoma is an Indian name. Some say it means "Valley of the Moon;" others insist it means "Valley of Many Moons." Still others

* See, in the NATIONAL GEOGRAPHIC MAGAZINE: "Holidays with Humming Birds," by Margaret L. Bodine, June, 1928; "Hummingbirds in Action," by Harold E. Edgerton, August, 1947; "Befriending Nature's Children (California wildlife)," by Agnes Akin Atkinson, February, 1931.



Drawn by Harry C. Oliver and Irvin C. Atkinson

California's Romantic Valley of the Moon Lies Within Easy Distance of San Francisco

Sonoma, where General Arnold retired to a ranch home, was Mexico's northern California headquarters. Fort Ross was the Russians' coastal citadel. Drakes Bay is named for Sir Francis Drake, who landed from the *Golden Hind* in 1579, set up a cross, and claimed the country for the British. Jack London had his ranch home near Glen Ellen. Napa is famous for its wineries.

say it was formerly the name of an Indian chief and has a different meaning.

When we who live here see the moon rising over the Mayacmas Mountains, we understand why Indians thought there were many moons.

A Valley of Rich Variety

Standing out with surprising bigness, apparently never twice in the same place, the moon appears and disappears behind the different peaks. It may suddenly make a startling appearance above a low point on the mountain ridge; again, it may come from behind a clump of trees or over a large live

oak, but, seemingly, always from a different direction.

As valleys go, the Valley of the Moon is not large. It probably measures about 10 miles across its base at the south, where it opens out into the level, low-lying plains and swamps that border San Pablo Bay. Triangular in shape, the distance to the apex at the north is about 15 miles.

Small as it is, in pre-white man days the valley provided food and clothing for several thousand Indians. Deer and bear roamed the wood-covered hills and mountain sides, even after the white man came.

Down in the valley proper, lush grass and native clover covered the fertile land, which, with its rich vegetation and many clear streams, provided food and shelter for numberless flocks of ducks and geese and for the beautiful California quail. Then, too, the streams were filled with fish.

Food was never a question for early inhabitants. Neither was there any need for a Fish and Game Commission to create and enforce conservation measures prior to the coming of the white man.

The Grapes of Three Valleys

Adjacent to the Valley of the Moon, beyond the range to the east, lies the Napa Valley. This entire area—the Sonoma, Napa, and Petaluma Valleys—provides our country with some of its very best grapes and its extra-fine wines. To this section came the Italian, Swiss, and French vinegrowers and winery experts, bringing with them the European technique of growing grapes and making wines. Today wineries are spotted throughout the area (Plates V, XI, XIII, and page 713).

At the head of Napa Valley lies Calistoga, a small town marking the site of an old Indian village located near active hot springs and geysers (Plate VII). The Indians seem to have recognized the health-giving properties of the hot sulphur-bearing water and built shelters for those who came for treatment.

Many years later the white man came. He not only realized the benefits of the hot sulphur water but also sensed the scenic value of the geysers, from an economic point of view, and, in his efforts to capitalize on both, established the town of Calistoga.

What effect, if any, all this heat and constant turmoil beneath the earth's surface had upon forests of hundreds of centuries ago is not clear; but not many miles from the Calistoga geysers lie gigantic petrified redwoods.

These enormous trees maintain their grandeur even in a petrified state, regardless of whether they are entirely uncovered or whether they lie with but a portion of their trunks exposed, the balance of the trees still remaining hidden in the hillside. Trunks of these petrified trees look similar to those of their descendants, which today grow to great size and height in this area (Plate XII).*

Near the head of the Valley of the Moon is the city of Santa Rosa, seat of Sonoma County. County government was moved to Santa Rosa from Sonoma one evening, when the good citizens of Sonoma were having a town meeting to determine just how to prevent the Santa Rosans from getting it!

Santa Rosa is an extremely modern, fast-

growing young city. Luther Burbank settled there in 1873. He obtained a small plot of ground, and then, with his uncanny knowledge of plant life, gave to mankind vegetables and fruits larger in size and more improved in flavor than any that had yet been produced, even in California! Burbank's home and gardens are still a mecca for thousands of tourists (Plate VI).

Egg Basket of a Nation

To the west of Sonoma Valley, across a small range, lies the Petaluma Valley. It has been known for many years now as "the egg basket of the United States." Chicken ranches are as thick there as orange groves in southern California. Every family, regardless of the size of its property, seems to raise chickens and sell eggs. Chickens, mostly white Leghorns, are seen in all directions, by thousands and hundreds of thousands.†

This entire area, from the Pacific shores eastward to the great Sacramento Valley, also provides pasture for hundreds of dairy farms and ranches, with their Jerseys, Guernseys, and Holsteins.

Sonoma Valley has abundant natural and farm resources. Why Spaniards were so slow to realize its value is not clear. After establishing the Mission Dolores in San Francisco in 1776, they slowed up in their explorations and settlements. It seemed they needed a new impetus, an extra push, to carry them into this then unknown territory to the north of San Francisco Bay.

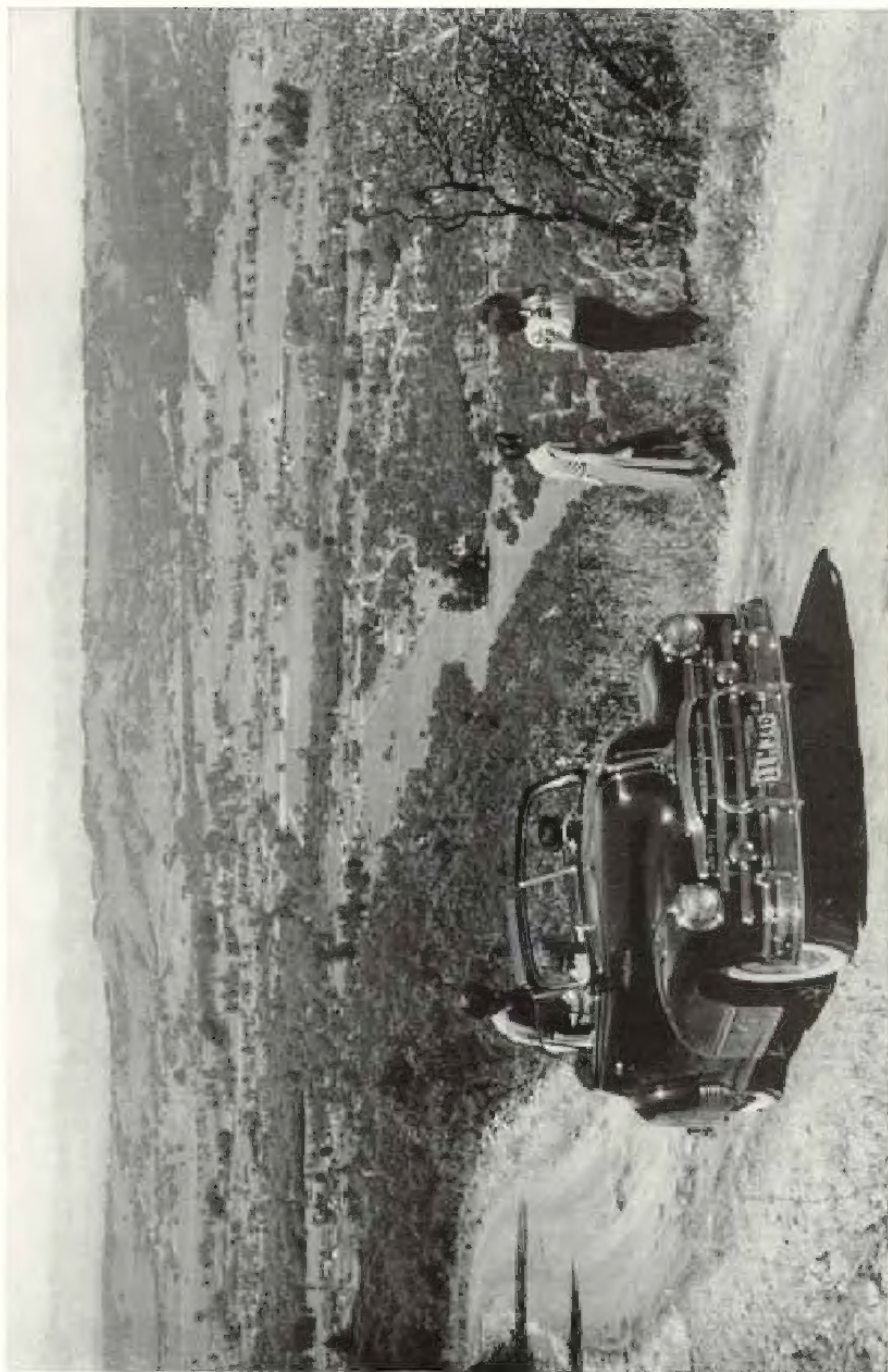
The region was not entirely unknown to white men, however, for in 1579 Sir Francis Drake, if we may accept some historians, led a small detachment across the mountain ranges from the Pacific and may have traveled as far east as the Valley of the Moon. The trip was made while sailors careened his ship for recalking and cleanup on the shores of what is now Drakes Bay.

The Spaniards themselves should have known something of the fertility of the area, after Captain Quiros, having left the San Francisco water front in a barge, poled, sailed, and rowed up the Petaluma Creek in 1776.

In much the same way as they proceed today, without so much as a "by-your-leave" or "may-we," in 1812 the Russians landed at Bodega Bay, west of the Valley of the Moon. Before the slow-moving Spaniards

* See "California's Coastal Redwood Realm," by J. R. Hillebrand, NATIONAL GEOGRAPHIC MAGAZINE, February, 1939.

† See "Northern California at Work," by Frederick Simpich, NATIONAL GEOGRAPHIC MAGAZINE, March, 1938.



Luther Burbank's "Chosen Spot of All Earths" Delights Travelers, Who View the Valley from Its Eastern Approach

Indians named the Valley of the Moon, and Jack London, who owned a ranch here, spread its fame. Prosperous little communities, pleasure resorts, vineyards, poultry farms, and cow pastures dot the valley. The mountains "are lovely," Burbank wrote; "the valley is covered with majestic oaks, I cannot describe it."

realized what had happened, they had established permanent settlements, with fortifications, not only on Bodega Bay but also at Fort Ross, some miles north.

From that time on, Russian hunters and trappers roamed the entire coastal and valley areas at will, going as far south as San Francisco Bay.

By 1816 the Russians had 28 of their own countrymen and 80 Aleut Indians at Fort Ross. That same year they called on the Spanish governor at Monterey, asking for a treaty to cover their settlements and their fur hunting. That seemed the "push" the Spaniards needed!

Up to that time they had been using velvet glove tactics; but now they politely but firmly asked the Russians to go home. The Russians, using their own brusque methods, declined as firmly to go, in the meantime continuing their trapping, hunting, and foraging over the entire Sonoma region. This matter was not settled until the Russians' voluntary withdrawal in 1841.

The Russians Left Their Mark

The Russians did not withdraw from this section of our country without leaving their mark. We still have "Russian River" and "Fort Ross," and small near-by towns, each an outgrowth of an early Russian settlement.

A far more serious and important Russian imprint, however, is the effect of their indiscriminate campaign against fur-bearing animals.

The sea otter is a typical example. In the early 1800's these animals were found along the California coasts and in the bays in countless numbers. Killing them for their fur was comparatively easy.

While the Russians were in northern California, slaughter of these sea otters was terrific, comparable to our slaughter of the bison on the Great Plains. Although the Russians were not solely responsible for the almost complete extermination of the sea otter, they probably killed more than any other one group of people.

In the years following the Russian departure, practically no sea otters were to be found. Today, after years of conservation measures, they are staging a comeback, so that one may now occasionally see several hundred of them at a time.

To return to the northward march of the Spaniards:

In 1817 they established a mission at what is now San Rafael. Later they sent another expedition to Sonoma Valley to explore and see what the Russians were doing. Gabriel

Moraga, leading the party, reached Sonoma Valley but returned after a tough fight with the Indians, having accomplished little.

Four years later, in July, 1823, a Sonoma settlement was started in earnest.

In that year Ensign José Sánchez, Don Francisco Castro, and Padre José Altimira paddled up Petaluma Creek and crossed the mountains into Sonoma Valley. They found the hills covered with large oaks of many kinds, red madroña, manzanita, and bay trees; in mountain valleys they found the giant redwoods.

They crossed more streams and located more springs, both hot and cold, in the valley than they had ever seen before in California. Wild game seemed to be everywhere. Indians told them they were in "Sonoma Valley."

They selected a site near the clear, cool springs and planted a cross, the location of the new mission. Padre Altimira wished to locate a site for a mission which would replace the Mission Dolores in San Francisco. They had found in this valley everything that was lacking on the sand dunes surrounding the San Francisco Mission.

Here was the place to establish the last of the missions. The white man had arrived, had come to stay, in the "Valley of Many Moons."

Spaniards called the place "New San Francisco." Padre Altimira wrote in his journal: "Everyone is greatly pleased with the location, particularly with the native stone to be found for building and with the many springs of clear water." Later he wrote to the governor: "All agree that it offers more advantages than any place between here and San Diego."

Founding of Sonoma Mission

The mission was completed and called "San Francisco Solano." Missionary work was started. Papooses were baptized; Indians were clothed and fed, taught religion, sewing, and various arts and trades. Male and female Indians were housed in separate buildings. Everything seemed to be progressing most satisfactorily when in 1826 the mission burned to the ground. History places blame for the fire on the Indians.

The mission was destined for much misfortune. It later burned a second time, but by 1829 a new mission, an adobe building with tile roof, was completed. This time the mission was there to stay.

During this later period, a new figure, Mariano Guadalupe Vallejo, rose in the Spanish government. Vallejo was a very young man in 1829 when he took over as comandante of the Presidio of San Francisco.

Prior to that he had shown remarkable skill, not only in fighting and defeating the Indians but also in getting along with them as neighbors without fighting. He had also gained the reputation of being a military leader, an excellent disciplinarian and drill-master.

Realizing the capabilities of Vallejo, Governor José Figueroa sent him to colonize the northern frontier and later to secularize the missions. Vallejo started at once making trips throughout the territory under his jurisdiction. On his first trip to Sonoma he lost a saddle horse on an island in San Pablo Bay. The mare was finally found, and a new name came to California (attention Navy), the Spaniards calling the island "Mare Island."

In the meantime, the Sonoma Mission had grown and prospered. Its grainfields yielded 2,000 or more bushels a year; its holdings comprised over 2,000 head of cattle, 700 horses, 4,000 sheep, and a vineyard with more than 3,000 grape-bearing vines.

Figueroa continued to be much disturbed by the aggressive actions of the Russians. In 1833 he sent Vallejo to Fort Ross to learn just what the Russians had in mind with regard to their future settlements, what kind of alliances they were making with the Indians, and what their intentions were.

Russians "Viewed with Alarm" in 1830's

Vallejo was convinced that additional settlements must be started nearer to the Russians, to stop their advance. In October of 1833, Spaniards began to arrive at Petaluma; another colony was started at Santa Rosa. Neither colony lasted long, but there stands today the old adobe ranch house built in 1836 by Vallejo near Petaluma on the ranch he had selected for his own operations (page 690).

Figueroa still "viewed with alarm" the Russian situation and designated Vallejo as "Military Commander and Director of Colonization of the Northern Frontier," with instructions "to establish a colony at Sonoma and arrest the progress of the Russians."

With Indian and other aid Vallejo moved his headquarters to the site of Sonoma and laid out plans for a pueblo. He first outlined a central plaza of about eight acres and built the pueblo around it.

A road 110 feet wide, sufficient width for six pieces of artillery to gallop abreast, was staked out, leading south from the plaza to the point of debarkation on Sonoma Creek. Town lots and large acreages were granted to Vallejo's friends and relatives. Barracks for his soldiers and Vallejo's quarters were placed adjacent to the mission.

Fortifications were built in the near-by hills, and a wall with embrasures was erected around the barracks. In determining the mores and bounds of the pueblo, Vallejo used a hand compass and a leather lariat. The hand compass was not too accurate, and the lariat stretched, or became taut, depending upon whether the air was damp or dry, and whether the survey was made in the early mornings or during the dry middays.

These irregularities in directions and distances caused the American civil courts much trouble years later when it became necessary to record the deeds.

Two taverns were built in the pueblo, the Blue Wing Inn and Hotel El Dorado. Both housed many famous men during the next few years. In its early history the Blue Wing provided quarters and gambling accommodations for Joaquín Murieta, the outlaw, and for "Three-fingered Jack" García. Their gangs, dispersing after robberies and raids in far-distant parts of California, retreated to this famous old inn.

Fugitives from justice seemed to gravitate toward Sonoma. A "Colonel Rogers" (an assumed name), wanted for crimes in the East, lived in the General Persifor F. Smith home for about 30 years. He probably could have spent the rest of his days there in peace, had it not been for his inherent fear of Federal officials.

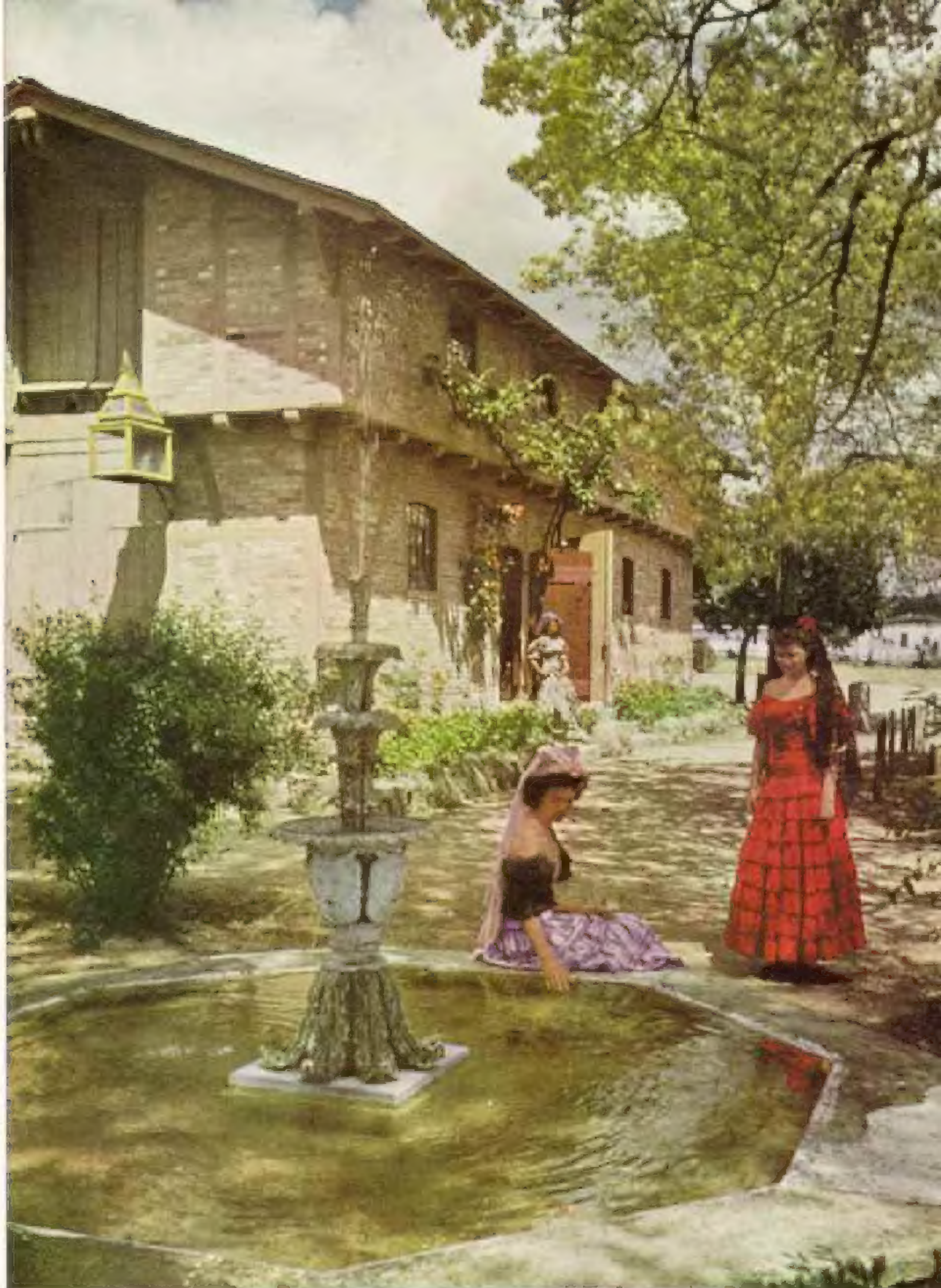
When President Grant landed in San Francisco on his return from a tour of the world, he made a trip to Sacramento. When he expressed a desire to return to San Francisco by coach, a search was made for a suitable stopping place at which to spend the night. Somebody suggested General Smith's home at Sonoma.

To this Colonel Rogers objected. The Secret Service became suspicious. An investigation was made, and Colonel Rogers was returned to the east coast for trial. His case was dismissed, but the "Colonel" did not return to Sonoma.

"Tears of the Mountain"

Vallejo used the springs to the north of the city as a water supply for his troops. He called the springs *Lachryma Montis*, "Tears of the Mountain." Those springs give forth abundant pure, fresh water and have been used by the city of Sonoma as a water supply ever since Vallejo burned the three-inch holes through redwood logs for water pipes. Thus was created the city's first water supply (Plate V).

The Spanish settlement at Sonoma prospered from the first. The soil was extraordinarily fertile, water was plentiful, and hot



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I

Reproduction by William H. Carter

A Swiss Chalet in the Valley of the Moon Recalls California's Gold-rush Days

Its timbers, ready-cut and numbered, served as ballast on a ship carrying forty-niners around the Horn. The chalet stands in Sonoma on an estate of Gen. Mariano Guadalupe Vallejo, the valley's pre-American overlord.



Home from the War, Chicago of the Army of 11. Arnold Stroll the 4th and 5th of the Valley Road





This Valley Rocks Of Swinging Hills Is A Mountain Peak or a Smoothed Terrace

Mountain Peak or
 Smoothed Terrace
 The mountain peak
 is a high, steep, and
 rugged hill, often
 covered with trees
 and shrubs. The
 smoothed terrace
 is a flat, open area
 of land, often used
 for agriculture or
 as a place of
 recreation. The
 mountain peak
 is a natural feature
 of the landscape,

while the smoothed
 terrace is a man-made
 feature.



2. The only persons who
 have been admitted to
 the Society since the
 last meeting, are

Journal of Management Studies, 19(1), 67-80.

The diagram illustrates a two-stage experimental design. Stage 1 consists of a 'Pre-Test' and a 'Post-Test' for a 'Control' group. Stage 2 consists of a 'Pre-Test' and a 'Post-Test' for a 'Treatment' group. The diagram shows the flow of participants through these stages and the comparison between the two groups.

The diagram illustrates the experimental setup. A participant is seated at a table, looking at a video screen. On the screen, a target (small circle) and a starting point (large circle) are visible. The participant's hand is at the starting point. The distance between the starting point and the target is labeled 'Distance'. The video screen is labeled 'Video screen'. The participant is labeled 'Participant'.

[Faint, illegible text from bleed-through]

1. The first step is to identify the problem.
 2. The second step is to define the problem.
 3. The third step is to analyze the problem.
 4. The fourth step is to develop a solution.
 5. The fifth step is to implement the solution.
 6. The sixth step is to evaluate the solution.
 7. The seventh step is to monitor the solution.
 8. The eighth step is to maintain the solution.
 9. The ninth step is to improve the solution.
 10. The tenth step is to document the solution.

1. The first part of the document discusses the importance of maintaining accurate records of all transactions, both incoming and outgoing, to ensure transparency and accountability. It emphasizes the need for regular audits and the use of reliable accounting software to track expenses and income effectively.

2. The second section focuses on budgeting and financial planning. It outlines how to set realistic goals, allocate resources wisely, and monitor progress against the budget. This involves identifying key areas of expenditure and ensuring that funds are used efficiently to achieve organizational objectives.

3. The third part addresses risk management and contingency planning. It highlights the potential risks associated with financial mismanagement and provides strategies to mitigate these risks. This includes establishing emergency funds, diversifying investments, and having backup plans in place for unforeseen circumstances.

4. Finally, the document concludes by stressing the importance of communication and collaboration among all stakeholders involved in the financial process. Regular meetings and open dialogue are essential for making informed decisions and ensuring that everyone is aligned with the organization's financial strategy.

1. The first part of the text discusses the importance of the "National Day" and the role of the government in organizing the celebration. It mentions that the government has decided to hold a large-scale event in the capital city, which will include various cultural performances, sports events, and a grand parade. The text also highlights the significance of the day for the citizens, as it is a time to reflect on the nation's history and achievements.

2. The second part of the text describes the preparations for the event. It mentions that the government has allocated a large budget for the celebration, and that various departments are working together to ensure that everything runs smoothly. The text also mentions that the event will be broadcasted live on television, so that citizens can watch it from the comfort of their homes.

3. The third part of the text discusses the impact of the event on the economy. It mentions that the celebration will attract a large number of tourists, which will boost the local economy. The text also mentions that the event will create many jobs for the citizens, which will help to reduce unemployment.

4. The fourth part of the text discusses the role of the media in the celebration. It mentions that the media will play a key role in reporting on the event, and that they will also be responsible for promoting the celebration to the public. The text also mentions that the media will be responsible for ensuring that the event is covered in a fair and balanced manner.

5. The fifth part of the text discusses the role of the citizens in the celebration. It mentions that the citizens will be encouraged to participate in the event, and that they will be responsible for ensuring that the celebration is a success. The text also mentions that the citizens will be responsible for maintaining the peace and order during the event.

[illegible]



Luther Burbank's Velvet-skinned Chairs Hold No Terrors for Bare Arms and Legs

In Santa Rosa the great plant breeder's velvet chairs hold no terrors for bare arms and legs. The chairs, which are produced by the Burbank chair company, are made of velvet and are so soft and comfortable that they are perfect for the most delicate of people.



1. The following are the names of the persons who have been appointed to the various committees of the Board of Directors for the year 1912:

1. The first part of the paper is devoted to the study of the properties of the function $f(x)$ defined by the equation $f(x) = \sum_{n=0}^{\infty} a_n x^n$, where a_n are the coefficients of the power series. It is shown that the function $f(x)$ is analytic in the disk $|x| < 1$ and that it satisfies the functional equation $f(x) = x f(x^2) + 1$.

Sideways, Through English Wood & Loos "Cathedral" Provides a Young Visitor with a Season of Shows & Fun





Under a Hot Sun - Workers here and from the adjacent Hop Yards in a vast under a Web of Trullie Strands

At a distance of about 100 feet from the shore, a line of palm trees and other tropical vegetation is visible. The water is calm and blue, extending to the horizon. The overall atmosphere is peaceful and scenic.





Remond Church in the Petrified Forest Ruins Preserve. Trees Six Million Years Old
 The church is a simple wooden building with a dark roof and a small steeple. The church is surrounded by large, ancient-looking trees with thick trunks and dense foliage. In the foreground, a group of people, including children and adults, are standing on a dirt path leading to the church. The scene is peaceful and scenic.



From an 1890-gallon Cask a "Wine Thief" Steals a Sample of Its Aging Brandy

The "Wine Thief" is a character in a story who is known for stealing samples of wine from large casks. In this illustration, the thief is shown standing on a ladder, reaching into a large wooden cask to steal a sample of its aging brandy. A woman in a patterned dress stands nearby, looking on. The scene is set outdoors with a stone wall and a wooden fence in the background.



Scandinavian Forests. Waxes on a Pine Black Region behind the Pine Stand toward Anne's Descriptive Woods

The following theorem shows that the above conditions are sufficient for the existence of a solution.

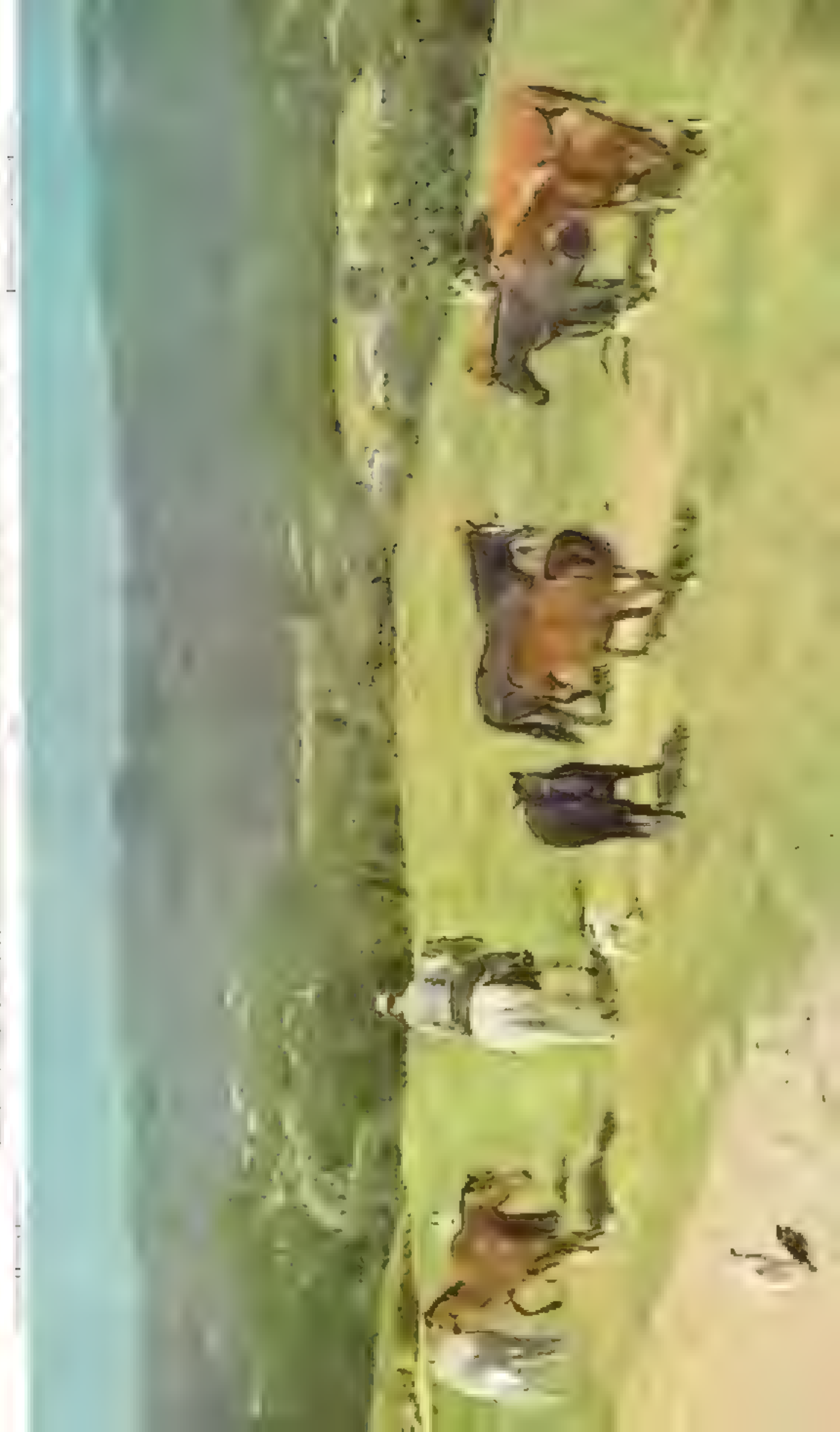
1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It includes a detailed description of the experimental procedures and the statistical analysis performed.

3. The third part of the document presents the results of the study. It includes a series of tables and graphs that illustrate the findings of the research. The data shows a clear trend in the relationship between the variables studied.

4. The fourth part of the document discusses the implications of the findings. It highlights the potential applications of the research in various fields and the need for further investigation.

5. The fifth part of the document concludes the study. It summarizes the key findings and provides a final statement on the significance of the research.





After Years of Wandering, Jack London Settled Down in the Valley of the Moon
 Like the author of "The Call of the Wild," London was a pioneer writer of the West. He was born in San Francisco, and his father was a prospector. The author of "The Call of the Wild" and "The Sea Wolf" was a pioneer writer of the West.

springs provided health centers. Abundant stone and the woods covering the hills provided plenty of building materials.

In 1845 the Commandante's brother, Salvador Vallejo, planted an enormous vineyard, long known as "Buena Vista." That vineyard was to make history for the wine-making industry. It continued as just another large vineyard until 1856, when Col. Augustus Haraszthy, a Hungarian nobleman who knew vines and wines from long years of experience in Europe, bought the property.

Haraszthy went back to Europe shortly after. When he returned to Sonoma, he brought back large quantities of cuttings from the best vines abroad. Within a short time he had 6,000 acres of vines growing, vines of the best types, but, what was far more important, he was growing the vines without irrigation!

He thus introduced into California a new technique in the raising of grapes. It was not long before most of the vineyardists in California stopped irrigation of their vines. The Buena Vista Company built long underground caves in the limestone hills, similar to the best European wine caves, or cellars, and these Buena Vista cellars still exist.

While the pueblo was growing and prospering, it seemed that Vallejo himself was to have one great problem after another in his administration of the northern frontier. Other nations besides the Russians were interested in this fertile area.

In 1841 John McLoughlin, the Hudson's Bay Company factor at Fort Vancouver, and Sir George Simpson, governor-in-chief of the Company's activities in the Americas, paid a visit to California. In January of 1842 they worked their way up Sonoma Creek.

Reaching the dock after dark, they spent the night there quite uncomfortably, but next morning everything was changed. Vallejo gave them a true California welcome, with troops, Indians, salutes, colors, and flowers galore! With his customary hospitality Vallejo arranged for a tour of the valley. They saw the entire Valley of the Moon and surrounding countryside at its best, with local guides to show them points of interest.

When the sight-seeing was over, Sir George Simpson talked with Vallejo about California's past, present, and future. Very quietly, and with true British tact, he led up to suggesting the advantages of tying up with the English. Looking back on that conference, it would seem reasonable that the United States are fortunate that Vallejo knew how to demand compensation. He demanded little for himself, but a great deal for the United States and for

the next morning, the purpose of their visit unfulfilled.

Not many months before, Vallejo had had a visit from a French representative, M. Eugène Dédot de Molras, from the French Legation in Mexico City. After De Molras had taken the customary trips around the valley and had been extended the usual hospitality, and departed, Vallejo wrote to his governor: "There is no doubt but that France is intriguing to become mistress of California."

Though Vallejo balked the diplomatic approaches of the British and the French, the envoys, advance agents, and pioneers of another great country were in the offing. By then he was to become "baffled" and completely baffled.

Then Came the Americans!

The American settlers started coming like a gentle breeze and ended like a hurricane! Nothing that Vallejo did, no action that he took, seemed to retard their arrival or postpone the inevitable.

The first of the Americans came out to settle in the valley in the 1830's. For a while their numbers were small and presented no great problem for Vallejo. He was a very generous man and even gave land grants to those he thought worth while. However, when the 1840's came around, the American settlers, hunters, and trappers had begun to reach the Valley of the Moon and its surrounding area in large numbers.

In the meantime, the governor had directed Vallejo "to drive the immigrants back across the mountains." Vallejo could not see his way clear to do this. Having to pay his own army personally, and all danger from the Indians and from the Russians now being gone, Vallejo disbanded his troops.

Besides Vallejo, there was another man in California at that time who understood the Mexicans, and understood them well. That man was Capt. John C. Fremont. Fremont also recognized the strength and capabilities of Vallejo. At the same time, he realized that drastic action of some kind must be taken to establish American control of California.

On June 12, 1846, either with or without Fremont's backing, a group of 33 well-armed men, under the leadership of Ezekiel Merritt, rode from the vicinity of Fremont's camp, near Sacramento, to Napa. There they stayed for two days. Then, with a very early morning start, they rode to Sonoma, arriving about daybreak on June 14th. There was little Vallejo could do about it, for his small detachment of soldiers was no match for the American riders.

they came from curiosity, or they came just as travelers. The register of the Blue Wing must have been a "Who's Who" of California.

Fremont arrived almost before the Bear Flag was hauled down. Gen. Persifer F. Smith, American military governor, established his headquarters here in 1849. Kit Carson was present at the time of the Bear Flag revolt. Governor Lillburn W. Boggs served there as first American civil governor of northern California.

Three lieutenants of the U. S. Army, U. S. Capt. W. S. Sherman and Philip Sheridan, each destined to become a great war leader for the Union cause, lived in the small town for a while.

Jack London Added to Valley's Fame

Once, when the town mayor "got off the beam" in his work, Sherman was sent to Sonoma to bring him to Monterey for disciplinary action. This he did with customary Sherman efficiency. H. W. Halleck and Joe Hooker, two Civil War generals of note, were stationed at the Sonoma barracks for a time. Hooker remained in the valley longer than most of the others. He acquired a large acreage to the north of the town and lived there until the Civil War called him away.

Our list of relatively contemporary celebrities who came to the valley can terminate with Jack London, who arrived in 1904 and later bought a ranch of some 1,400 acres high up on the mountainside. It was there he built his home, "Wolf House," an impressive dwelling wonderfully located. However, it burned before he ever lived in it. Jack London wrote many of his novels in the valley; one, *The Valley of the Moon*, probably was the first advertisement for the valley (Plates XV and XVI).

Sonoma did not grow fast. A railroad was built to the valley; the civil governor and his staff departed to establish their capital elsewhere; the military headquarters left for other parts. Sonoma even lost to more ambitious and energetic Santa Rosa the distinction of being the seat of county government.

Vineyards and wineries increased. Small resort towns grew up around the hot springs. Orchards were planted, which produced prunes and pears with the same profusion as that with which the vines grew grapes.

In the 1890's it was apparent that Sonoma, the Valley of the Moon, was just about the right distance from San Francisco for weekend residences. This came into existence Solara Vista, the Spreckels estate. Here Rudolph Spreckels raised and raced horses, had fine cattle and vineyards, and the Valley of

the Moon again became well known throughout the State and the country. Mrs. Adolph Spreckels lived there for years. During World War II she generously turned her estate over to our Army Air Forces for use as a rest and recreation center.

Today Sonoma is still a small town of about 1,500 people. Its characteristics have not changed very much since the days of Vallejo. The vineyards are still flourishing, the wineries are operating. Buena Vista is being rejuvenated, and its vineyards and winery are producing lavishly.

A new industry has made its appearance, the raising of turkeys. In the Valley of the Moon the broad-breasted ("Mac West") turkey is raised in large numbers. Turkey ranches are small, medium, or large. With 4,000 turkeys you have a small ranch; with 7,000, about medium. Then there is the Weldmeyer Ranch where some 60,000 turkeys a year are raised. That is a big one!

Turkey raising is a very exacting business, because the birds can be inexplicably dumb. For example, if one frightened bird climbs into a barrel, all the others try to follow, and soon a couple of dozen have smothered to death!

Horse racing and training in the valley have changed. Instead of racing thoroughbreds, attention now centers on raising and training three- and five-gaited horses. The Wagon Wheel Ranch not only sends turkey eggs and turkey breeding stock all over the world; it also raises outstanding five-gaited horses.

Old Landmarks of the Plaza

The Sonoma plaza today retains many of the old landmarks. The mission, rebuilt around the original adobe walls, is now a museum. The barracks, built to shelter the company of Spanish soldiers mobilized by Vallejo to keep the Indians under control and to prevent further advance by the Russians, is still here. The Blue Wing tavern still stands in its original form. The El Dorado is there, too, but it has had so much modern face lifting that it has lost its attractive Spanish character.

At the corner of the plaza, where the original Vallejo flagpole stood and where the Bear Flag was raised, stand now a commemorative statue, a plaque, and a new flagpole. Pieces of the original flagpole are in the museum. The Vallejo ranch house has been taken over by the State and is unchanged in form or appearance.

Around the pueblo are many of the original adobe houses which still retain their unique appearance. From time to time, when excava-



Sonoma's Bear Flag Plaque Marks the Spot Where American Rule Began in California

It was upon this spot that the first American flag was hoisted, from the Mexican and rancho lands of Sonoma, by the men who were to lead the great revolt against the Mexican Government. The plaque marks the spot where the first American flag was hoisted, from the Mexican and rancho lands of Sonoma, by the men who were to lead the great revolt against the Mexican Government.

It was in the year 1846 that the first American flag was hoisted, from the Mexican and rancho lands of Sonoma, by the men who were to lead the great revolt against the Mexican Government. The plaque marks the spot where the first American flag was hoisted, from the Mexican and rancho lands of Sonoma, by the men who were to lead the great revolt against the Mexican Government.

Valley's Charm Unchanged

Over the years, however, the beauty and the charm of the valley have been unchanged. The valley is still the same, with its rolling hills and its people are unchanged.

from the days of Mission Valleys. The climate, the trees, and the rolling hills are the same.

For many years, the valley has been a place of peace and beauty. The valley is still the same, with its rolling hills and its people are unchanged.

We have moved to a new place, but the valley is still the same. The valley is still the same, with its rolling hills and its people are unchanged.

However, when we come to the valley, we find a new place. The valley is still the same, with its rolling hills and its people are unchanged.

Masterpieces on Tour

By HARRY A. McBRIDE

Administrator, National Gallery of Art

MIRACULOUSLY surviving the war, some of the greatest art masterpieces of Europe, many painted before Columbus crossed the Atlantic, are being seen and enjoyed by millions of Americans. Nearly a million people viewed them in Washington, D. C., alone.

As art lovers feast their eyes upon these priceless works of long-dead masters or view the reproductions of selected paintings in these pages, they may well see in the background the lurid flash of bursting bombs, hasty flight from shattered Berlin, the glow of a German salt mine. Probably no such collection of art in history has traveled so far and had so many narrow escapes.

Safeguarded as carefully as VIP's (Very Important Persons), 202 German-owned masterpieces were brought from Germany by the United States Army in December, 1945, for safekeeping and proper preservation at the National Gallery of Art, in Washington. They soon became known as "very important paintings."

In the collection were 15 works by Rembrandt, six by Rubens, five by Botticelli, two by Pieter Bruegel (Breughel) the Elder, two by Vermeer, three by Raphael, five by Titian, three by Watteau, and five by Jan van Eyck, as well as paintings by Fra Angelico, Giovanni Bellini, Lucas Cranach the Elder, Durer, Giorgione, Frans Hals, Hans Holbein the Younger, Fra Filippo Lippi, and others (Plates I to XXIV).

"Very Important Paintings" Cross Country

From Washington all but the most fragile have gone on a tour of 14 cities—New York, Philadelphia, Chicago, Boston, Detroit, Cleveland, Minneapolis, Portland, Oregon; San Francisco, Los Angeles, St. Louis, Pittsburgh, and Toledo—before being returned to Germany.*

What a story these paintings could tell! Like Europe's millions of displaced persons, they were shunted hither and yon by war.

All but two of the paintings in this famous collection came from the Kaiser Friedrich Museum, in Berlin. This impressive building of Italian baroque style was completed by the German Government in 1905 at the junction of the Spree River and the waterway called the Kupfergraben in the heart of the city. At the start of World War II it housed one of the world's greatest art collections.

The real nucleus of the collection was the gift in 1821 of nearly 600 paintings, mainly of the Italian schools, by the British merchant, Edward Solly, then living in Berlin. In fact, the Solly mark appears on the backs of several of the masterpieces which traveled to America. Among them are the famous "Saint Sebastian" and the "Venus," by Botticelli; "Madonna and Child," by Raphael, and the famed Titian "Self-portrait."

The museum building itself suffered severely from aerial bombardment. The massive dome was shattered, a large part of the roof demolished, the lower floor piled high with rubble, and the stone walls so cracked that the cellars were flooded with several feet of water. Its reconstruction will be a long and costly job.

In the first days of the war the Nazis expected heavy air raids over the German capital; in 1939 the curatorial staff of the Museum hurriedly removed the most precious works of art to its vaulted stone cellars.

Although early air raids did not materialize, the paintings were left in the cellars. Many were carefully crated, but not all, because even then wood was scarce, and specialists to do the packing were even scarcer. The crated paintings were merely stood around the cellar walls.

In 1945 air action over Berlin started in earnest. Close to two railroad stations, the Kaiser Friedrich Museum, with its glass skylights, no longer formed a safe repository for such treasures. The collection made its first move from home to an air raid shelter on Dönhofsstrasse.

Soon this protection also became inadequate and a second move was made, this time to a sink tower, a huge concrete anti-aircraft station, near the Alexanderplatz.

The sink tower provided excellent protection. The paintings were placed on various floors. There were accommodations for a curator and restorer and, most important for preservation of the paintings, the structure was air conditioned.

Even in 1945 conditions in Berlin became more and more critical. As air raids increased in intensity, the art experts wanted the paint-

* The German-owned paintings were shown at Minneapolis, October 29-November 1; Portland, November 24-December 1; San Francisco, December 6-18; Los Angeles, January 3-11; Cleveland, January 29-February 11; Pittsburgh, February 13-21, and Toledo, March 1-5.



A Record-shattering Throng of Art Lovers Sarges at the National Gallery's Doors

From every section of the city, and from every part of the Nation, art lovers were coming to the gallery. The fact that an important work of art had been acquired by the National Gallery had attracted a great many people to the gallery. The April 15th opening of the new collection of art was a great success.

As we walked from the 17th to 18th street, we met the art lovers everywhere, but a dead end of the street. The crowd was so large that it was impossible to pass.

Suddenly, however, there came a great crowd from 18th to 19th street, and the great procession of art lovers began to move forward.

The art lovers were in the line, and the procession was already out of the line, and the art lovers were in the line. Never more, however, in March 15th, 1911, when the gallery was back to the art lovers.

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Ten-hour Trip to a Salt Mine

The art lovers were in the line, and the procession was already out of the line, and the art lovers were in the line. Never more, however, in March 15th, 1911, when the gallery was back to the art lovers.

Beyond the boxes and bags of gold and silver the Colonel noticed an old painting leaning against the wall. He did not know it at the time, but this painting was Rembrandt's famous work, "The Man with the Golden Helmet." Three years later the Colonel, on duty near Washington, was surprised to recognize it on the walls of the National Gallery of Art during the exhibition in Washington!

Further search revealed crate after crate of great paintings. These masterpieces and other works of art were then taken over by the Arts and Monuments officers attached to the United States Army.

Thousands upon thousands of notable works of art were found, not only in salt mines but also in storehouses of castles, in vaults of banks, in cellars of monasteries and churches, and in isolated private homes. They had been hurriedly evacuated and stored to protect them from air raids, and now they became a real problem for our Army.

Art collection centers were established at Munich, Wiesbaden, Marburg, and other places. In Munich the two huge modern buildings on the Königsplatz, built to be the headquarters and shrine of the Nazi Party, were used for storing art—a use incidentally, which was a far cry from the hellish aims of their builders. In Wiesbaden the museum on the Wilhelmstrasse was chosen.

To these centers rumbled big, well-guarded Army trucks day after day, bearing their precious burdens. These moves were more leisurely—air raids were a thing of the past.

Looted Art Returned to Owners

In the centers the art objects were classified by our Arts and Monuments officers into two categories—German loot, and collections of legitimate German ownership.

The loot was promptly sent back by our Army to the country from which it came. On one day alone a train of 45 freight cars filled with works of art was sent back to France. Hundreds of thousands of looted items were returned to the country of ownership. A magnificent job has thus been done by that branch of our Army known as the Monuments, Fine Arts, and Archives Branch.*

The Kaiser Friedrich collection was trucked first from the Merkers mine to vaults in the Reichsbank in Frankfurt and later to the collection point at Wiesbaden—150 miles from its wartime quarters in the salt mine.

In October, 1945, it was decided to send a part of the great Berlin collection to the United States for safekeeping until better facilities could be made available in Germany.

The collection centers at Munich and Wiesbaden had suffered considerable war damage. Little or no coal could be spared to heat them, and there was difficulty in obtaining glass to replace the shattered windows and material to make the roofs watertight.

Moreover, the Army was forced to guard what was probably the greatest accumulation of art ever brought together in one small geographical area.

The United States Zone was filled not only with the treasures of all the important German, Austrian, and Hungarian museums except Dresden, but also with the vast pile of art looted by the Nazis from various occupied countries.

Personnel and Material Sources

Material such as canvas, varnish, glue, and boxes for the art objects were in short supply, and German museum personnel was lacking, and German museum personnel was scattered or still being screened.

On the principle that it is better not to have all your eggs in one basket when the going is rough, as it was immediately after the occupation of Germany, a selection of "some 200 paintings" from the Berlin museums was made upon orders from high authority.

Packing of the paintings for their transatlantic journey was started in the Wiesbaden museum, in rooms piled high with precious paintings, sculpture, and other art pieces.

The progressive intensity of Allied bombing in Berlin was here discernible. The first packing cases made for evacuation of the paintings were of excellent wood, carefully fashioned, with hinged tops, hardware handles, and beveled edges. As urgency increased, plain boxes of flimsy material were hurriedly nailed together. Finally, there were crates in which the paintings were merely piled on top of one another with no pretense of careful packing.

Many of the old, ornate frames were broken beyond repair, and many of the paintings themselves were damaged.

Packing materials for the long voyage were almost unobtainable, but by using the better crates from Berlin and by "scrambling" tar paper from some stock pile, the job was finally completed.

Cameras Record Each Painting's Condition

Of great help was the discovery of a large supply of chemically treated cellophane-like paper which the Germans had been using in air raid shelters as protection against gas. This material proof against fire and water, was used to line each packing case.

* See "Europe's Looted Art," by John Walker, NATIONAL GEOGRAPHIC MAGAZINE, January, 1946.



Portrait of a Young Woman • *Portrait of a Young Woman*

Portrait of a Young Woman, by Hans Memling, 1480. Oil on panel, 14 x 11 inches. The painting depicts a young woman, possibly a member of the House of Burgundy, wearing a light-colored, possibly white or cream, hooded garment (coiffe) over her head and shoulders. She is wearing a dark, patterned dress with a high collar. Her hands are clasped in front of her. The background is dark and indistinct.



500-46

Abstract Wall Relief - 1964 - The Family Connection

For Alex, George, and John - 1964 - Alex, George, and John - 1964 - Alex, George, and John - 1964





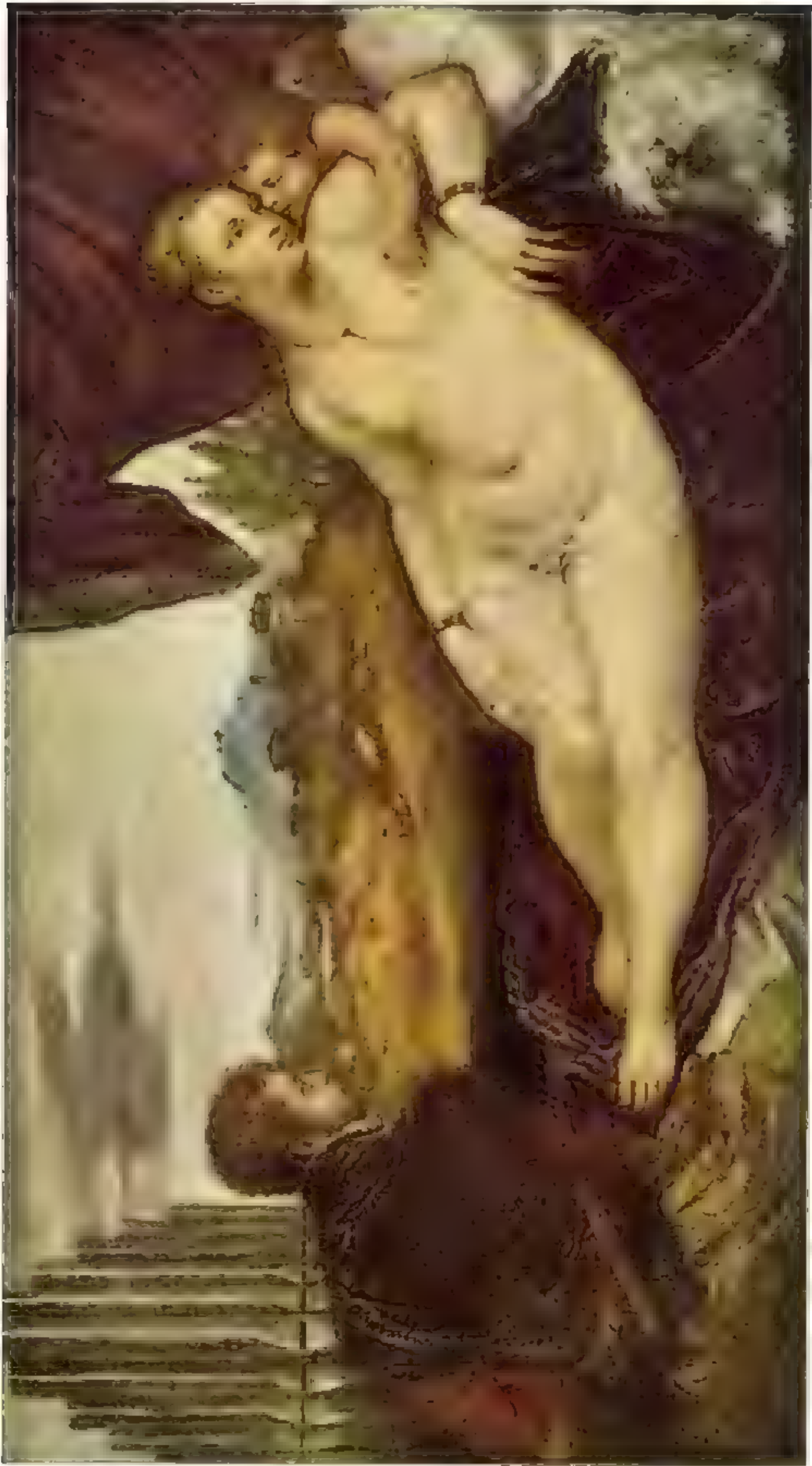
THE DRAFTSMAN

A man in a white shirt and dark trousers, sitting at a desk and writing with a quill. He is looking down at his work. The background is dark and indistinct.

A man in a white shirt and dark trousers, sitting at a desk and writing with a quill. He is looking down at his work. The background is dark and indistinct.



12. *Portrait of a Man*. Oil on canvas. 1880. The artist's portrait of a man, possibly a friend or a student, is a study in light and shadow. The man is shown from the chest up, wearing a dark, hooded garment. The background is dark and textured, with a few small, bright, yellowish-green highlights that draw the eye to the figure. The overall mood is somber and mysterious.



LOVE AND PSYCHE - Venus with the human flower

From the collection of the Earl of Arundel, London. The figure is the work of the great master, and the composition is of the highest order. The figure is the work of the great master, and the composition is of the highest order. The figure is the work of the great master, and the composition is of the highest order.

Figure 1

The figure shows two vertical bars representing different experimental conditions. The left bar is associated with 'N' (number of subjects) and the right bar with 'T' (number of trials). Both bars have multiple horizontal segments, suggesting repeated measurements or trials for each condition.

μ = μ_0 μ_1 μ_2 μ_3 μ_4 μ_5 μ_6 μ_7 μ_8 μ_9 μ_{10} μ_{11} μ_{12} μ_{13} μ_{14} μ_{15} μ_{16} μ_{17} μ_{18} μ_{19} μ_{20} μ_{21} μ_{22} μ_{23} μ_{24} μ_{25} μ_{26} μ_{27} μ_{28} μ_{29} μ_{30} μ_{31} μ_{32} μ_{33} μ_{34} μ_{35} μ_{36} μ_{37} μ_{38} μ_{39} μ_{40} μ_{41} μ_{42} μ_{43} μ_{44} μ_{45} μ_{46} μ_{47} μ_{48} μ_{49} μ_{50} μ_{51} μ_{52} μ_{53} μ_{54} μ_{55} μ_{56} μ_{57} μ_{58} μ_{59} μ_{60} μ_{61} μ_{62} μ_{63} μ_{64} μ_{65} μ_{66} μ_{67} μ_{68} μ_{69} μ_{70} μ_{71} μ_{72} μ_{73} μ_{74} μ_{75} μ_{76} μ_{77} μ_{78} μ_{79} μ_{80} μ_{81} μ_{82} μ_{83} μ_{84} μ_{85} μ_{86} μ_{87} μ_{88} μ_{89} μ_{90} μ_{91} μ_{92} μ_{93} μ_{94} μ_{95} μ_{96} μ_{97} μ_{98} μ_{99}

... ..

100

[illegible]

Party	North	Center	South
1. Communist Party	~10%	~10%	~10%
2. National Front	~10%	~10%	~10%
3. National Union	~10%	~10%	~10%
4. National Rally	~10%	~10%	~10%
5. National Front (center)	~10%	~10%	~10%
6. National Union (center)	~10%	~10%	~10%
7. National Rally (center)	~10%	~10%	~10%
8. National Front (south)	~10%	~10%	~10%
9. National Union (south)	~10%	~10%	~10%
10. National Rally (south)	~10%	~10%	~10%

[illegible]

—

[illegible]

Figure 1 is a line graph showing the percentage of total sample for each age group (0-14, 15-24, 25-34, 35-44, 45-54, 55-64, 65-74, 75+) across different years (1980, 1990, 2000, 2010, 2020). The y-axis ranges from 0 to 100. The x-axis shows the years. The graph shows a general trend of decreasing percentages for younger age groups and increasing percentages for older age groups over time.





Journal of Management Education 30(6)

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However, even if the model is not a good fit, the model can still be used to plan power. The χ^2 test is used to test the null hypothesis that the model is a good fit. The χ^2 test is used to test the null hypothesis that the model is a good fit. The χ^2 test is used to test the null hypothesis that the model is a good fit.



This is a picture of the Square of the Church of St. Peter, at Tully, in the County of Dublin, taken from the window of the church. The picture is a very fine one, and shows the square in a very good light. The picture is a very fine one, and shows the square in a very good light.



THE WIDOW OF ZEPHRAH, and her child. — John, and the Head of the Widow.

The painting is a reproduction of the original, and is a very fine one. The woman is shown in a very graceful and elegant manner, and the child is a very beautiful figure. The painting is a very fine one, and is a very fine reproduction of the original. The painting is a very fine one, and is a very fine reproduction of the original. The painting is a very fine one, and is a very fine reproduction of the original.



PLATE IV. THE NURSE. "A Little Girl with Her Nurse."

The nurse is a woman of about fifty years of age, with white hair, and a gentle expression. She is wearing a dark purple dress with a white collar. The girl is a young child, with blonde hair, wearing a patterned dress. She is sitting on the nurse's lap, looking towards the viewer. The background is a soft, muted green.



148. 149.

THE MAN WITH THE PALE

The Man with the Pale is a portrait of a man with a large, dark, bushy beard and mustache, wearing a red tunic and a grey cloak. He is holding a small object in his right hand and a sword in his left hand. The background is dark and indistinct.



THE LIFE OF JOHN BUNYAN, BY HIS SON, JOHN BUNYAN, JUNIOR.

As the author of this work, John Bunyan, was a man of great piety and a true Christian, the reader may be assured that the account of his life and death, which is here given, is true and correct.

The author of this work, John Bunyan, was a man of great piety and a true Christian, the reader may be assured that the account of his life and death, which is here given, is true and correct.

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$$\begin{aligned} \mathbb{E}[\mathcal{L}_n(\mathbf{w})] &= \mathbb{E}[\mathcal{L}_n(\mathbf{w}) - \mathcal{L}_n(\mathbf{w}^*)] + \mathbb{E}[\mathcal{L}_n(\mathbf{w}^*)] \\ &= \mathbb{E}[\mathcal{L}_n(\mathbf{w}) - \mathcal{L}_n(\mathbf{w}^*)] + \mathbb{E}[\mathcal{L}_n(\mathbf{w}^*)] \\ &= \mathbb{E}[\mathcal{L}_n(\mathbf{w}) - \mathcal{L}_n(\mathbf{w}^*)] + \mathbb{E}[\mathcal{L}_n(\mathbf{w}^*)] \end{aligned}$$



1000

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THE SEVEN AGONY OF CHRIST - BY J. M. W. TURNER



Fig. 36. A Native American Man with the Red Cap

The man in the illustration is a Native American, and is wearing a yellow tunic and leggings, and a red cap. He is holding a bow in his right hand and an arrow pointing downwards in his left hand. The background is a dark, dense forest with trees and foliage.

A group of German photographers from Marburg took record photos of each painting before it was boxed, to establish its condition as the Army had found it. Thereafter it was up to the Army to protect the collection and to return it without damage or deterioration. There the Army did a superb job!

It was November, 1945. Snow and ice were already present in certain areas; roads and bridges were still in war-torn condition. Wiesbaden was a long way from any seaport. Accordingly, it was decided that the 202 should travel by rail.

Boxcars were out of the question; baggage cars were unheated and often wind-swept. But in the severely blasted railroad yards at Frankfurt, amid twisted rails, grotesquely shattered locomotives, burned-out freight and passenger cars, we found two German hospital cars bearing large red crosses.

From these the interior equipment had been removed. They could be heated and the windows were intact—perfect parlor cars for the 45 cases of paintings, with room to spare for 10 Army cots for the armed guard which was to accompany the shipment.

Conveyed by truck from Wiesbaden, the paintings were carefully loaded and the two cars were shunted around the city to the passenger station, where they were attached to the "Main-Seiner," the night express to Paris. Thus started on November 20, 1945, the most important transatlantic voyage of art!

Jean Frenchman Finds a Way

The next step was from Paris to Le Havre, and here it looked for a time as if a real snag had appeared. A small French switch engine coupled onto the two cars to take them from the Gare de l'Est to the Gare St. Lazare. The track led through a tunnel. Suddenly, with a whistled shriek of warning, the engine halted to a halt at the tunnel entrance.

French trainmen waved their arms and shouted. The cars were too big for the clearances. Mon Dieu, what was to be done now? Conferences, measurements, pandemonium!

Then came a big, muscular foreman who settled the matter with an ax. He chopped off the lower steps of each car, then climbed up on the roof and knocked off the tops of the ventilator hoods. The cars went through.

Next stop was Le Havre, alongside the Army transport *James Parker*. Always the paintings were under strict armed guard, night and day. Security measures were perfect.

Hand-carried aboard, the cases were carefully stowed and lashed along one side of the officers' air-conditioned dining saloon, well above the water line.

Here the military police guard was replaced by ten returning soldiers who volunteered for the task of protecting the paintings and also of enforcing the rule against smoking in the officers' saloon. This restriction did not seem to make the German paintings too unpopular with the passengers.

After an uneventful crossing, the ship passed the Statue of Liberty atop of the cutter 6, with no visible impression upon Botticelli's "Saint Sebastian" or Van Eyck's "The Man with the Pink" (Plate XVII), or upon the other German-owned masterpieces. Though America was still a wilderness when many of them were painted, they were to discover here an amazingly art-conscious nation.

Unloading at a pier in New York began at seven the next morning. Each crate was hand-carried down the gangplank and carefully placed in two Army trucks and a trailer truck for the trip to Washington. Carpenters built protecting rails in the trucks so that there would be no jolting or movement.

Art Preceded by Shrieking Sirens

Under heavy armed escort in four staff cars with an extra truck and tires in case of emergency, the radio-controlled convoy left the pier at noon.

Like royalty, the masterpieces passed through New York streets and a specially cleared lane of the Holland Tunnel behind police motorcycles with blaring sirens.

Relays of State police led the convoy through New Jersey, Delaware, and Maryland. A special ferry took it across the Delaware River at Pennsville.

The distinguished visitors were met late that night at the District of Columbia line by a Washington motorcycle police escort. Moving through red lights with shrieking sirens, they passed the Capitol and arrived in state at the National Gallery of Art, which was to be their temporary home.

The Gallery staff started immediately unpacking them. On rubber-tired carts the crates were gently moved, one by one, to the large so-called "copyist's room"—an air-conditioned room with red-tiled walls, gray cement floors, and heavily barred windows.

Exclamations as "Assumption" Strands Revealed

It was an exciting moment when the first of the masterpieces was removed from its wrappings in these surroundings. The beautiful "The Assumption of the Virgin," by Andrea del Castagno, appeared in all its golden glory amid exclamations from the curatorial staff (Plate X).



C. R. Smith, Special Correspondent

General Patton's Yanks Discover "The Greenhouse" in a Gloomy German Salt Mine

In Merkers, April, 1945, two slaves of the Nazis pointed out to the Third Army the room of art and gold. At first the startled Americans supposed the shaft "fulmost hidden." Since that day the work of the American soldiers has been to save and restore the masterpieces of the Third Reich.

The 202 paintings were minutely examined, again photographed for condition reports, and found to have suffered no damage on the voyage.

The many masterpieces which arrived unframed were provided with strong temporary frames of stained poplar. They were wiped to remove accumulated dirt and grime and hung on heavy wire screens.

The policy of the Gallery, as custodians for the Army, was to do everything it could toward safeguarding the paintings, but no restoration other than that absolutely necessary for preservation was attempted. This was thought to be a job for German restorers upon return of the paintings.

Daily inspections were made; temperature and humidity were carefully controlled. Many of the paintings were on delicate wooden panels, some of which had become warped years ago; therefore, it was necessary to handle them with special care.

In the mine, too, they had become saturated with moisture. Had they dried out too quickly, contraction of the wood would have caused blisters and cracks.

The National Gallery could not afford condensation—the proper readjustment of these panels to normal atmospheric conditions.

To Be Returned in Better Condition

Because of the air-conditioning system at the Gallery, unique among large museums—relative temperature and humidity could be controlled in the copyist's room so that the pictures would lose excessive moisture slowly and safely. From this point of view, particularly, the pictures are in better condition today than when they left Germany.

Some showed incrustations of salt from water which had dripped on them in the Merkers mine. This damage was carefully removed, and so successfully that salt marks are now noticeable on only two of the paint-

[illegible]

Movie Picture Released by Americans Is Seen by Largest Amount in Washington, D. C.

Maximal C_{max} for C_{max} was calculated as the first value of C_{max} that was greater than C_{max} for C_{max} . The first value of C_{max} that was greater than C_{max} for C_{max} was calculated as the first value of C_{max} that was greater than C_{max} for C_{max} . The first value of C_{max} that was greater than C_{max} for C_{max} was calculated as the first value of C_{max} that was greater than C_{max} for C_{max} .

For The Year 1988, under the heading
"Federal Taxation: Maroon, 1988, 11th Edition"
Title: See also: *Library of Congress* X1-X11.

On the 5th of October received a letter from the British Consul at London, dated the 2nd inst., by which it appears that in March 1855 the Army General had the honor and pleasure to return in acknowledgment of the valuable services rendered by the Government of the Province of the Cape of Good Hope, and to express his satisfaction with the conduct of the various departments of the Government.

The National Bureau of Aids reported that the percentage of so-called "African" AIDS cases of average age peaked

According to a "reviewer special" article, the meetings were "highly successful" and "popular" and the guests "returned to the hotel" on March 17, 1968. The reviewer also noted that the "Globe" had been

I was in Yuma again, and a second or third person from a newly arrived locality brought a snake with him.

[illegible][illegible]
$$E = \frac{1}{2}mv^2 = \frac{1}{2}m_0c^2\left(\frac{v}{c}\right)^2 = \frac{1}{2}m_0c^2\left(\frac{v}{c}\right)^2 \left(1 + \frac{v^2}{c^2} + \frac{v^4}{c^4} + \dots\right)$$

All Accessories Reverts To stock

(1) The following summary information was obtained from each of the six trials:

$\frac{2}{\pi} \tan^{-1} \frac{\bar{x}}{\sigma}$

The next day, it was present passed through the entrance, and taking the balcony, there was a high wall, and the stone road.

THE UNIVERSITY OF CHICAGO PRESS

Journal of Management Education 32(10):1039-1050

257,228, and still the crowds poured into the building.

The peak day was April 11, the number reaching 67,490, something heretofore unheard of in art museum history (page 718). The show closed on Sunday, April 23d, and a completely exhausted Gallery staff, with the added detail of MPs, had received the astounding total of 964,970 visitors!

Crowds on many days were so large that the paintings could hardly be seen.

On the Mall side of the building, as many as 22 large buses were parked in one day. Motor coaches brought tourists from Maryland, Pennsylvania, Michigan, and two loads of colored schoolchildren from Birmingham, Alabama.

A husband of art students from Missouri traveled two days and two nights to see the exhibition.

Hundreds of classes came with their teachers from local and neighboring schools.

President Drops In; Comes Again

President Truman, out for his morning stroll, appeared at the service entrance one Sunday morning before the Gallery building was opened. He was shown the collection and enjoyed it so much that he made arrangements to come the following evening with Mrs. Truman and their daughter.

At a press conference later, the President lauded the exhibition and informed the reporters that his preference was the famous portrait of a merchant, "Georg Giese," by Holbein (Plate II and page 750).

A picture of this great masterpiece immediately appeared in many newspapers, and thereafter special guards were required to handle the crowds that wanted to see the President's favorite.

Special guests were invited to night showings. Senators and Representatives, their wives and secretarial staffs, came, as well as Cabinet officers and high officials of the armed forces. Queen Helen of Rumania and Ingrid Bergman, the movie actress, with many other notables, viewed the paintings.

One reason for the exhibition's success undoubtedly is that it was held at the height of the Washington tourist season; the famed cherry blossoms were in bloom. Also, as is the case with all activities at the Gallery, there was no admission charge. The newspapers, too, played an important part in publicizing the event, for this was deemed the most important temporary exhibition of paintings ever shown in this country.

Nevertheless, it remains something of a mystery as to why these paintings should have

taken the public's fancy to such an extent. The permanent collections in some of our own galleries—in Washington, New York, Chicago, Boston, and Philadelphia, for example—contain paintings as great and, with few exceptions, examples of the old masters equally superb in quality and quantity.

Time and again the Gallery guards remarked about the orderly crowds, "What fine people these are!" or "Where do all these nice people come from?"

Of course, there were a few visitors like the one who wanted to know where the Kaiser-treasure pictures were, and one well-dressed man wanted to see the "Herman" Goering loot!

But most of them were serious in their tour. Delight and even veneration were often reflected in their faces. In most cases, their motive obviously was more than idle curiosity.

Interest became so keen that the exhibition period at the National Gallery was extended one week by the Army. Then arose an insistence by the press, and by many persons in the art world, that more Americans be permitted to see it.

After a request by a subcommittee of the Senate Committee on Armed Services, and after consultation in Berlin with Gen. Lucius D. Clay, Commander in Chief, European Command, and Military Governor, it was decided that these masterpieces should go on a tour of the United States before being returned to Germany in April, 1949.

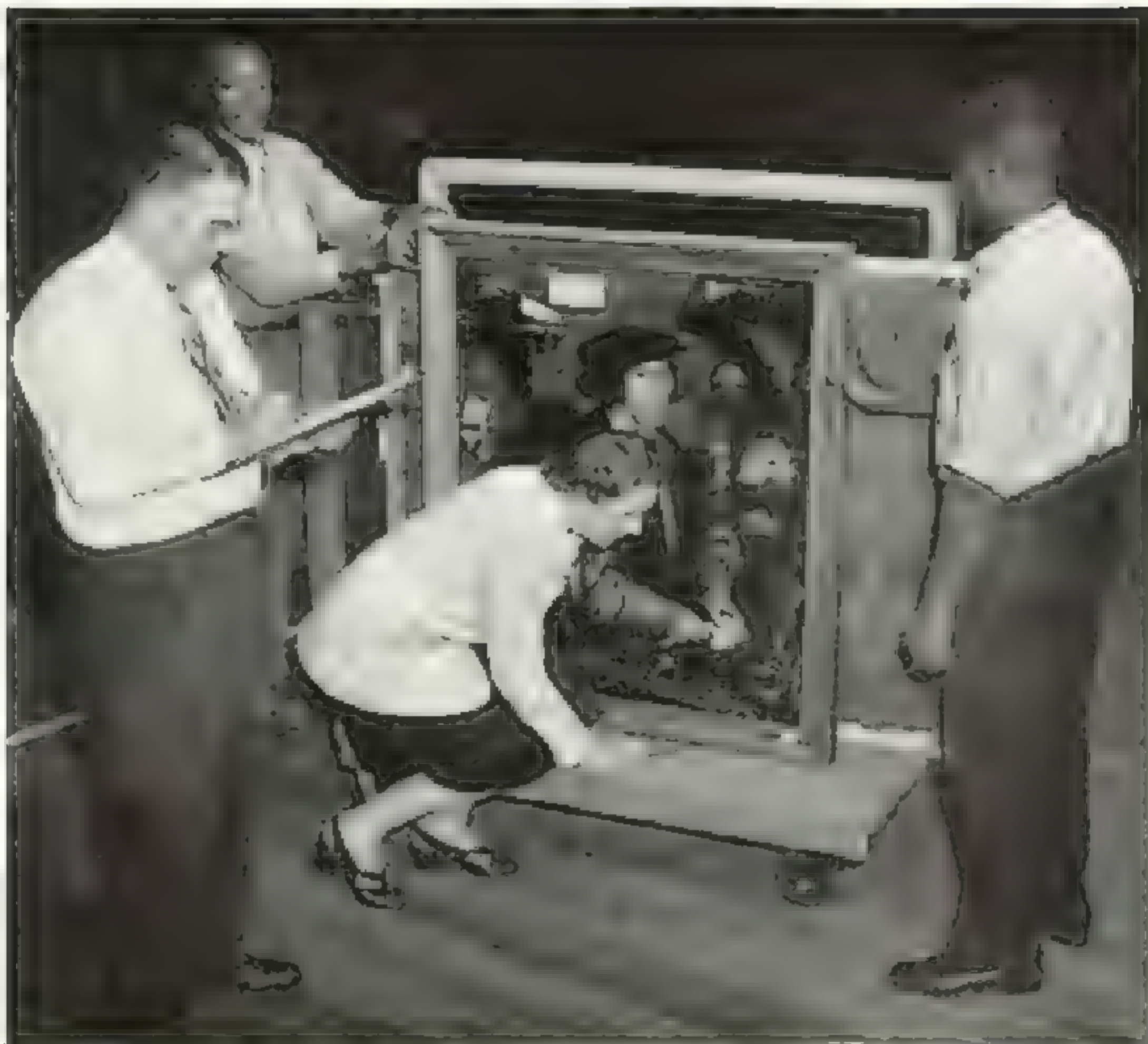
In each of the cities visited thus far, the paintings are being accorded the same warm welcome extended them in Washington—and, incidentally, are becoming the best-known and certainly the best publicized collection of great art seen in this country.

Most Delicate Paintings Start Home

Before the collection started its American tour, however, it was decided wise to withdraw 52 paintings—especially those on delicate wooden panels "most likely to suffer damage or deterioration" if sent on an exhibition tour and to return them at once to Germany.

Under Army auspices these were packed in 24 crates at the National Gallery. A wealth of packing material and expert care, to ensure their safe arrival, was used. Again they proceeded, on May 17, 1948, under police and military escort to Brooklyn, riding at reduced speed all through the night to avoid daytime traffic.

Special accommodations had been provided for the paintings and for their armed guard on the large United States Army transport *General Edwin D. Patrick*. Inside one of the mid-



Curator and Pointing. Old Friends from Berlin, Held Reunion in Washington, D. C.

The three men, all of whom had worked in the Kaiser Friedrich Museum, had been in Berlin during the war. The man on the left, the curator, was a consultant to the United States Army. The man on the right, the old friend, was a member of the National Gallery. This picture was one of the first taken in the museum after the war.

was placed in a large room. Each of the three men, who were all of the same age, was dressed in a suit. The man on the left, the curator, was dressed in a suit. The man on the right, the old friend, was dressed in a suit. The man in the middle, the old friend, was dressed in a suit.

Bystanders wondered what was going on. At first, they thought it was a private reunion. But when they saw the three men, they realized it was a public event. The man on the left, the curator, was a consultant to the United States Army. The man on the right, the old friend, was a member of the National Gallery. The man in the middle, the old friend, was a member of the National Gallery.

By midnight the 24 cases were safely deposited in the museum. The next day, the curator, the old friend, and the old friend, were all in the museum. The man on the left, the curator, was a consultant to the United States Army. The man on the right, the old friend, was a member of the National Gallery. The man in the middle, the old friend, was a member of the National Gallery.

"The United States Keeps Faith"

The following day, the curator, the old friend, and the old friend, were all in the museum. The man on the left, the curator, was a consultant to the United States Army. The man on the right, the old friend, was a member of the National Gallery. The man in the middle, the old friend, was a member of the National Gallery.

was, which, indeed, is a concrete example of how the United States keeps faith.

German newspapers carried accounts of the return of the art treasures.

The curator, the old friend, and the old friend, were all in the museum. The man on the left, the curator, was a consultant to the United States Army. The man on the right, the old friend, was a member of the National Gallery. The man in the middle, the old friend, was a member of the National Gallery.

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The Curlew's Secret

By ARTHUR A. ALLEN

Professor of Ornithology, Cornell University

*United States National Geographic Society, Cornell University, Arctic Expedition to North America
Expedition to Alaska*

With Illustrations from Photographs by the Author

UNTIL June 12, 1948, one bird—and one only—of all the 815 species of North American birds had successfully hidden the secret of its nesting place and summer home from the eyes of man.

This bird of mystery was the bristle-thighed curlew, so named because of dubious adornments sprouting from its flanks and even its belly (Plate I).

No bigger than a pullet, but strong of wing, this great little traveler was known to winter on Tahiti and other South Sea islands and in spring to fly 5,500 miles, often by way of the Hawaiian Islands, to the coast of Alaska (map, page 734). But there it seemed to vanish into the thin air of the North.

The story of the curlew's secret begins before the American Revolution with the famous round-the-world voyage of the British navigator, Capt. James Cook, during the years 1768 to 1771. It ends with a 1948 expedition sponsored by the National Geographic Society, Cornell University, and the Arctic Institute of North America, which was organized in 1944 by distinguished Canadians and Americans.

First Specimen Found in 1769

Captain Cook had already demonstrated his appreciation of science, his knowledge of navigation, and his administrative ability when he was selected by the Lords of the Admiralty to sail the *Endeavour* on a voyage of exploration around the world.*

The main objective from the standpoint of the Royal Society was to make observations on the transit of Venus across the sun, which might give information of value to astronomy and navigation. This happens about once in a hundred years and the Society, desiring data from widely separate points, wished the transit of June 3, 1769, observed from an island in the South Pacific.

Tahiti, then called Otaheite, had been visited by Capt. Samuel Wallis, R.N., the year before and was selected as the most likely place. Thither Captain Cook directed his course, leaving Plymouth, England, late in August 1768. Sir Joseph Banks, an ardent naturalist, was chosen by the Royal Society to accompany the expedition.

After an unusually well-ordered voyage, the expedition anchored at Tahiti on April 13, 1769, and stayed until July 13. It established friendly relations with the natives and recorded successfully the transit of Venus.

Three months on the island gave Banks and his helpers plenty of time to harvest a representative natural-history collection, and this was made available to other scientists upon the return to England.

Examining the expedition's bird collection, John Latham, a leading ornithologist of the day, recognized a curlew from Tahiti as different from the European whimbrel. When he published his *General Synopsis of Birds* in 1785, he listed the new bird as the Otaheite curlew. Its present scientific name is *Numenius tahitiensis*.

Birds Noted by Titian Peale

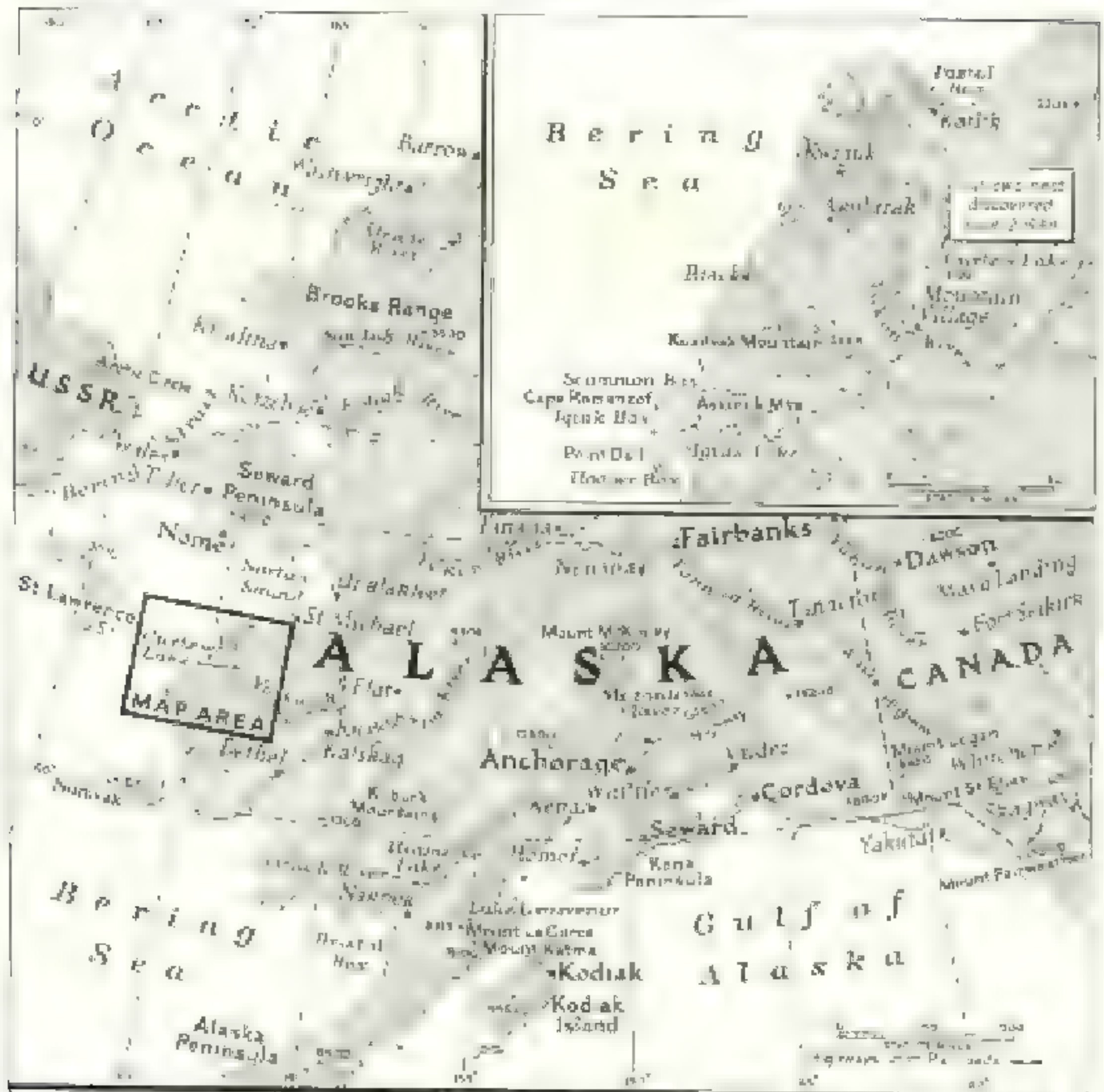
After Captain Cook had shown the way, practically every naturalist who visited any of the South Sea islands between September and April found Otaheite curlews and sent specimens back to the various museums of Europe.

From 1838 to 1842 Titian Peale, son of the artist Charles Wilson Peale, accompanied the United States Exploring Expedition to the South Seas under Lt. Charles Wilkes and found a curlew, in the Low (Tuamotu) Archipelago which he thought to be a new species. Because he noted curious bristlelike feathers on the flanks and belly, he called it *Numenius femoralis*, and the common name, "bristle-thighed curlew," has stuck to this day.

The bird proved to be the same as the one in Sir Joseph Banks' collection. The characteristic bristles on the flanks and belly of *N. tahitiensis* appear to have gone unnoticed by Latham.

For a hundred years after the discovery of the bird, naturalists believed it to be a resident of the South Seas and thought it must nest on some other island than the one they were studying. Then on May 18, 1869, Ferdinand Bischoff collected a bristle-thighed curlew at

* See "Columbus at the Pacific" by J. R. Hildebrand, NATIONAL GEOGRAPHIC MONTHLY, January, 1927.



Drawn by HARRY E. DILLON and JOHN H. A. SIMON

Vast Alaska Was the Haystack, a 6 $\frac{3}{4}$ -inch Nest the Needle

Air transportation and a combination of good weather, good judgment, and good luck enabled the National Geographic Society-Cornell University-Arctic Institute of North America Expedition to find the first known nest and eggs of the bristle-thighed curlew. This ornithological hide-and-seek ended in one of the most successful expeditions in the history of the world.

Kenai, Alaska, across the Kenai Peninsula from Seward.

On May 24, 1880, Dr. E. W. Nelson, who later became Chief of the United States Biological Survey, found two curlews on the west coast of Alaska, near St. Michael.

Five years later, on August 26, Dr. C. H. Townsend found one still farther north on the Kook (Kotuk) River, and it began to be suspected that possibly the summer home of the mystery bird might be Alaska.

Nevertheless, as late as 1896, when R. Bowler Sharpe published the 24th volume of *Catalogue of Birds in the British Museum*,

covering the shore birds of the world, he still gave as the range of the bristle-thighed curlew "Northwestern North America (rarely), visiting most of the islands of the Pacific Ocean, in some of which it is supposed to breed."

Early in the 20th century an increasing number of observations on this interesting bird were made without dispelling the mystery.

Hamner R. Dill and William A. Bryant, returning from Laysan Island in the Hawaiian group in 1911, reported about 250 bristle-thighed curlews using the island, and even roosting on the roofs of old buildings in a very unorthodox manner for shore birds.



"Better Take Rations for Two or Three Weeks in Case I'm Grounded by Weather"

With a Naval Reserve officer in command, the USS *Albatross* was on duty in the Chesapeake Bay and vicinity of Washington, D. C., and was carrying out her normal patrol duty. On the morning of July 1, 1933, the ship was in the Chesapeake Bay and was carrying out her normal patrol duty. On the morning of July 1, 1933, the ship was in the Chesapeake Bay and was carrying out her normal patrol duty.

In 1933 the U. S. Fish Commission, Division of Mammals, of the United States National Museum, with its field station at Maryland, reported the following numbers and names of birds in the area. They were as follows:

Curlews on Laysan Steel Eggs

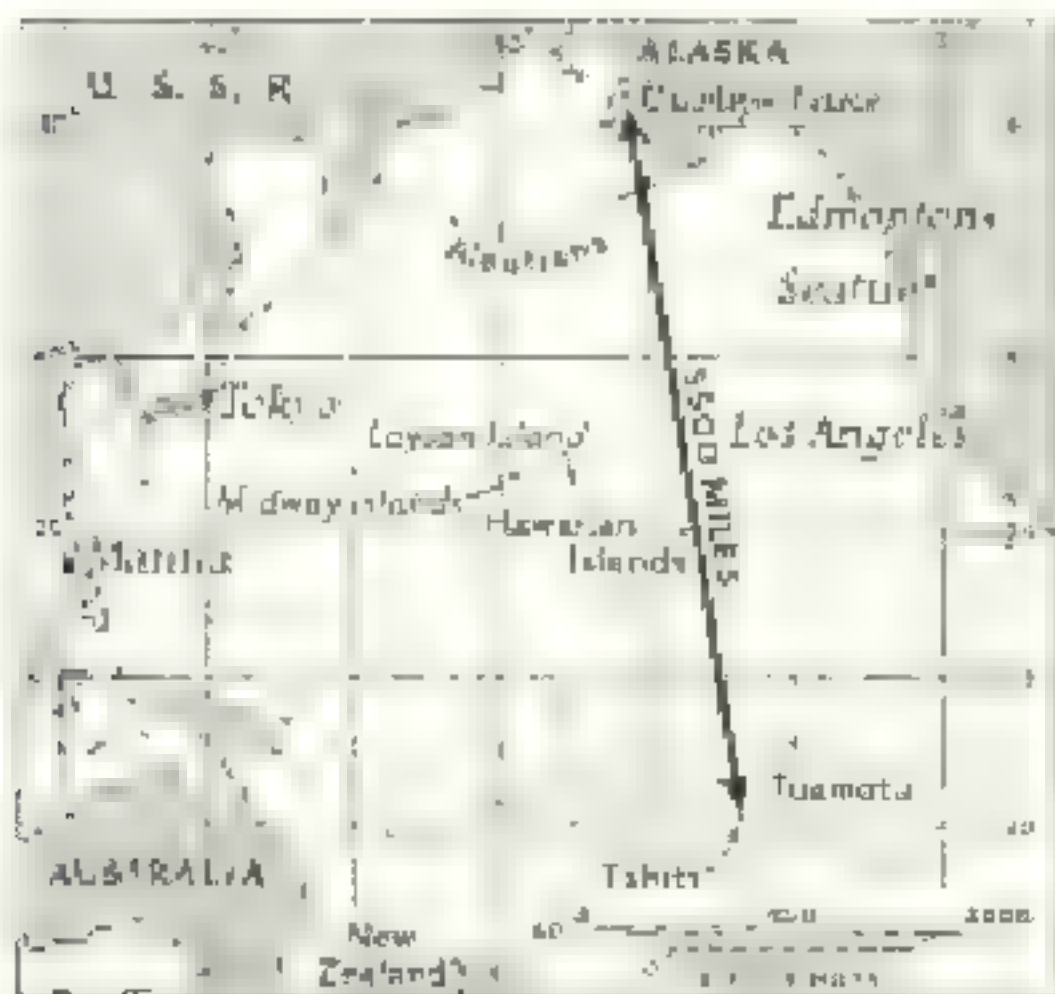
The following year, Dr. Alexander Wetmore, now Secretary of the Smithsonian Institution and a trustee of the National Geographic Society, states: "I have been able to find the nests of curlews in the reported area. They are in the area of the curlew's summer nesting

the eggs of terns, migratory birds, etc. (Ladies

The curlews were the first to be seen at the discovery and Dr. Wetmore's companion, the late Donald R. Dickey, made a collection of them, starting the eggs of a female and a pair of their young were collected in the National Geographic Magazine in July, 1933, accompanying an article by Dr. Wetmore, "The Life Among Laysan Rats and Curlew Nests."

Sometimes the curlews nested the eggs but more often they carried them away to their hills to break them on the sand.

So far as I know this is the only one that



From South Sea Isles the Curlew Flies 8,500 Miles to Black Alaskan Tundra

anyone has ever seen any shore bird eating the eggs of other birds, and we are at a loss to explain how the habit may have developed.

The curlews were often accompanied by ruddy turnstones, which also departed from all shore bird tradition by plunging their bills through the eggs of terns.

Meanwhile, these curlews continued to turn up in Alaska. In August, 1911, Rollo H. Beck collected a series of the birds about Nome, although farther to the northwest, around Wales, Alfred M. Bailey, Director of the Colorado Museum of Natural History, got but a single bird in some twenty years of collecting.

In 1924 Herbert W. Brandt, of Cleveland, and Henry B. Conover, Research Associate at the Chicago Museum of Natural History, made an 850-mile trip by dog team from Fairbanks to Igloolik Bay and Hooper Bay on the Bering Sea, by way of Mountain Village on the Yukon. Their explorations gave us the clues that finally led us to the nesting ground.

On May 22 Conover collected one curlew at Hooper Bay, but saw no more until the last day of July and the first week of August. Then, about twenty miles from the head of Hooper Bay, he found the curlews in abundance. Many started on their fall migration. Several hundred were seen scattered over the tundra, feeding on blueberries. All were adults without young, as is usual with shore birds starting their southern migration.

This discovery led Brandt to surmise that the nesting ground might be "at the eastern end of the Askinuk Mountains, or on Kusituk Mountain, and perhaps the mountains to the northward of Mountain Village on the Yukon River" (map, page 752).

In 1929, however, Arthur C. Bent, in his monumental work, *Life Histories of North American Shore Birds*, summarized what was known at the time by writing:

"The above facts would seem to indicate that the main breeding grounds are somewhere in the interior of extreme northern Alaska, probably on the barren ground."

Added weight was given to this belief when David Brower collected an immature bird on the Meade River in northern Alaska in August 1943. E. L. Jaques had found adults near Teller, northwest of Nome, in July, 1928.

On the other hand, Ira N. Gabrielson, while Director of the Fish and Wildlife Service visited Alaska in 1940 and reported flocks of curlews around Naknek and the Kvichak River the last of July.

This was the status of our knowledge in the fall of 1947. The nest and eggs of all other North American birds had been found; this curlew alone defied the ornithologists.

About this time I received a friendly letter from Warren M. Petersen, an Alaska Native Service schoolteacher at Kalskag, on the Kuskokwim River. He wrote me of his interest in birds and of efforts that he and Henry Kyllingstad, teacher at Mountain Village, had made to find bristle-thighed curlews.

In the summers of 1946 and 1947, following the suggestions of Brandt and Conover, these two men had searched in vain the eastern edge of the Askinuk Mountains. Earlier, Kyllingstad, with his small son, had climbed to the top of Kusituk Mountain without getting a clue to the whereabouts of the curlews.

Expedition by Plane Proposed

Petersen suggested the possibility of employing local bush pilots for transportation from one lake to another after melting of the ice in June. He sent photographs he had made the previous year and convinced me that even a one-month trip might yield results of interest and value.

Alaska was one of the objectives listed in the general plan of bird study which the National Geographic Society's Committee on Research had tentatively approved, and the quest of the unknown had occupied the Cornell Laboratory of Ornithology for years.

I immediately wrote Dr. Gilbert Grosvenor, President of the National Geographic Society, suggesting a cooperative expedition with Petersen, Kyllingstad, and the Arctic Institute of North America to find the bristle-thighed curlew's nest. By return mail this proposal received Dr. Grosvenor's cordial approval.

Then ensued weeks of correspondence with Petersen and Kyllingstad, made simpler by



Jumping-off Place for the Carlew Quest Was Mountain Village on the Yukon

Map of the Yukon River here nearly a mile wide that its channels photographed white. Black lines on map at this point show the river's abandoned beds. The nest was found 20 miles north of this Elbow town.

the air mail service and by the fact that they could talk to one another by radio although they were more than a hundred miles apart.

One factor worried us more than any other—the weather. Fogs often roll in from Bering Sea and last a fortnight. Flying is then impossible and even tramping over the mountains or tundra may become precarious.

To get color films of the bird life under bad weather conditions, we knew we should have to be prepared with some sort of artificial sunshine, as well as waterproof protection for our equipment. Since all transportation in Alaska would be by air, equipment would have to be light and reduced to a minimum.

Weeks of planning, testing, and packing followed. One gadget after another was tried and discarded; but the total of essential equipment made us decide that it would be best to have my son David start two weeks ahead with the heavy luggage. I would follow by plane as soon as university duties permitted.

David left Ithaca, New York, by train on May 18, bound for Seattle and thence by ship to Seward and train to Anchorage. There he arrived on May 20.

Ithaca to Anchorage in a Day

Leaving Ithaca on May 28, I arrived at Anchorage on the same day as David, but some six hours earlier, after 18 hours of flying.

Beyond Edmonton, Alberta, the plane followed, more or less, the Alaska Highway. We watched the flat, carpetlike wheatlands gradually change to rolling hills covered with light green cottonwoods and birches; then to black spruces for miles on end.

Innumerable ponds and lakes dotted the landscape, and I imagined them teeming with waterfowl, although we were flying too high to see individual birds. The streams were all running full and brown, with more loops and bends than a snake.

Snow-capped mountains began to appear, and we could see the highway winding its tiny thread up valleys and ridges toward a pass. Soon we were looking down on snow-covered ridges through drifting clouds and snow squalls like fine horizontal lines of white.

Swinging southwesterly over the pass, we followed the Glenn Highway down the famed Matanuska Valley to Anchorage, where we arrived at Elmendorf airport shortly after noon.

Anchorage is a bustling little town of about 20,000. It has more than redoubled its population since the last census and gives promise of becoming the metropolis of Alaska.

I like to say that the whole town turned out upon our arrival, and so it did. The demonstration, however, was not for our bene-

fit, but just the response to a fire on the main street. This the volunteer fire department quickly subdued with modern equipment.

Streets were crowded with cars, store windows were full of equipment, building was going on everywhere, and all prices were high.

Birds abounded in the near-by spruce forest, and we heard our first varied thrush's song—a long drawn-out, buzzy policeman's whistle of one note, quite disappointing from so distinguished a bird.

Moose and Grizzlies Sighted from Plane

Next morning we shipped all our baggage by air and boarded the Alaska Airlines' two-motored plane bound for Bethel, with stops at Homer and Naknek.

The pilot flew low along the Kenai Peninsula, which is largely a game reserve. Perhaps he enjoyed seeing moose and grizzlies as much as we did. Several moose had calves—one had twins—and once we saw five bears within a stone's throw of one another.

On our way from Homer to Naknek, we passed over beautiful Lake Grosvenor, long and narrow and like a giant's finger. I saw at home, and Mount La Grange, snow-capped and enshrouded in clouds.

From Naknek we followed the low-lying coast and then climbed once more to cross the snow-covered Kilbuck Mountains before we broke out over the tundra marking the delta of the Kuskokwim River, on which Bethel is located. Green trees fringe the river, but elsewhere is only the brown tundra with its thousands of lakes, ponds, and tidal channels like a giant jigsaw puzzle.

At Bethel we met Nat Browne, the bush pilot to whom we were to entrust our lives for the next month (page 753). His muscular frame, kindly smile, and matter-of-fact manner gave us confidence as he showed us the red Bellanca we were to use, anchored in the river in front of his home.

Warren Petersen, who had flown down from Kalskag two days before with his wife and daughter, joined us and showed us the "sights"—a group of houses and other buildings set along the streets at odd angles indicative of their temporary nature. The river changes its channel frequently and the whole town stands ready to move on short notice.

Because the ice never goes out of the ground, no cellars or stable foundations are practicable for even the largest buildings, including a modern hospital. A good jack is part of the necessary equipment of any home.

At 7:30 in the evening Nat Browne flew us to Mountain Village, on the Yukon (page 755)—a 70-minute flight—and landed us at



Lakes of the Expedition (Left) Lie Amid a Maze of Lakes and Ponds

David Allen surveys Inuk Valley between frothy rapids of the Askinuk Mountains. The expedition found scores of nesting birds but no bristle-thighed curlews. Such a labyrinth of lakes is a paradise to waterfowl and shore birds, but a headache to men on foot (page 759).

the front door of Henry Kyllingstad. Henry is not only the Native Service schoolteacher for this area, but the weather observer and radio operator as well.

So far as I could see, this whole country revolves around the Inuit, who are supposed to know everything and do anything from mending motors to bringing babies into the world and looking after the health of the whole community. Of course they cannot prescribe medicine without first locating the hospital physician and describing to him over the radio all the symptoms of the patient.

Plane Service as Patrol Wagon

In the Kyllingstad home we were entertained for two days while Nat Browne carried a plane-load of outaxes to one of the canneries on the coast and returned to fly up the river

with the local guardian of the peace. On this trip they brought out a native who had gone berserk and attempted to decoy his companion within range of his gun by hooking like a goose!

The delay afforded us opportunity to complete our plans for the curlew hunt, as well as to scout the hills for 10 miles around.

Each May since 1944 Henry had seen a few bristle-thighed curlews passing over Mountain Village, calling as they flew, and so low that when he answered their clear whistle he had been able to make them circle back. Our search yielded us little, however, except a pair of Hudsonian curlews that David located about five miles inland, the nest of a golden plover, and that of a Wilson's snipe, in addition to many nests of hoary redpolls and varied thrushes in the alders.



Discovered the Curlew Abandoned Attempts at Camouflage

A quick dash that flushed the sitting bird first revealed the actual nest of single-flushed curlew (page 767). The male soon returned to incubate, and the female followed him. After he had finished incubating, the female sat on the nest for a few days, but then she abandoned it and went to a new nest. After he saw that the bird was gone, the male returned to the nest. The female was abandoned to observers that one could practically touch them at the nest (Plate III).

We planned to make our first trip to Igik Bay and the foothills of the Askinik Mountains. After we had seen the region which had been especially mentioned by Warren David, and I were to pitch camp while Nat returned for Henry and the rest of the supplies. The first part of the Yukon and over the tundra had an air of quietness. The first part of the tundra was covered with low-lying shrubs and alders along the Yukon passed along us; then numerous old flood channels and winding estuaries and finally thousands of ponds, lakes, and channels. The first part of the tundra was covered with low-lying shrubs and alders along the Yukon passed along us; then numerous old flood channels and winding estuaries and finally thousands of ponds, lakes, and channels.

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It never occurred to me that they would start nesting, as apparently they did, shortly after the middle of May.

Our plan was to work near Igik Bay for a week or ten days and then to start hopping northward. Avoiding the coastal area that had been combed unsuccessfully by our predecessors, we would concentrate on the foothills of the coast range about seventy miles inland—if we could find a lake on which to land within walking distance of the mountains.

Two or three days at each stop, we hoped would be enough to determine whether curlews existed in the area.

As soon as Nat returned with the Eskimo prisoner, we loaded part of our supplies into the plane and started for Igik Bay, 80 miles to the southwest. Warren David, and I were to pitch camp while Nat returned for Henry and the rest of the supplies.

The first part of the Yukon and over the tundra had an air of quietness. The first part of the tundra was covered with low-lying shrubs and alders along the Yukon passed along us; then numerous old flood channels and winding estuaries and finally thousands of ponds, lakes, and channels.

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Engulfed in Cloud Amid Mountains

The plane moved past Kachas Mountain, a 2,449-foot cone rising from the flat tundra. Foothills of the Askinik appeared rounded ridges with projecting castlelike rocks.

Finally Igik Bay came into sight and we began to look for a place to land. The plane

promise of birds and a modicum of comfort.

We flashed by a valley that showed a sizable lake hugging the foot of the hills. By shouting and pointing we let Nat know that we wanted to look it over.

All this time the sky had been beautifully clear, although we could see clouds along the horizon, hanging over the tops of the Asklunks.

We came to another pass through the mountains, and Nat banked to circle back to our first valley. All went well until we rounded the first mountain, when suddenly we were engulfed in clouds. It was like jumping into fog and pulling the sheet over your head. We could see absolutely nothing, but we knew the mountains were towering on either side.

Nameless Lake Alive with Wings

Fortunately, we passed out of the cloud and there was our lake below us. Gliding down and banking abruptly, we found ourselves in a flurry of swans that had risen at our approach. On terrified wings they were escaping in all directions. For a moment the air was filled with geese, ducks, and cranes. We had come to the right spot!

The post boys struck the water and we skittered along for half a mile; then we came back to a quiet mooring on what we now called Igink Lake, since it had no name on the map. Two feet of snow still lay in the alders, and the lake was fringed with ice.

For the first nine days we camped in an open spot in the alders with snow all about us and a rivolet running through the cook tent. We had found a drier knoll for our sleeping tents, a couple of hundred feet up the side of the mountain.

A fascinating week of activity followed. Up early for a good breakfast, we shouldered cameras, tripods, and blinds and were off for the day in four different directions, carrying bars of chocolate for lunch. We explored the dry ridges of the mountains for curlews and the castlelike outcroppings for rough-legged hawks and gyrfalcons.

Henry made one 20-mile hike to the top of the highest peak, looking for surf-birds, but found only snow buntings and Baird's sandpipers that were not nesting in the valley.

One after another, the birds gave up their secrets until we had marked the nests of 44 of the species that dwelt in the valley.

Birds such as the western sandpiper, northern phalarope, Alaska longspur, hoary redpoll, tree and savannah sparrows were so common that we scarcely bothered to look for their nests when the birds fluttered out before us.

Nests of white-fronted, emperor, and ruddy geese (Plate V) were plentiful; we found

15 nests of the little brown crane and five of the whistling swan.

Upon finding a nest we wished to photograph, we first marked the spot with high-visibility orange cloth.

To get the birds used to a blind, we usually set up a dummy blind, a tripod of three sticks and a shelter half, about twenty feet from the nest. We left it for a day or two, or until the weather cleared sufficiently for photography. Then a blind with one person in it and set six to fifteen feet from the nest, depending on the size of the bird.

Before long we had eight dummy blinds and three full-sized blinds and were moving with our cameras from one nest to the next, as necessity demanded.

David shared my pack and served as "go-awayster" by tucking me into the blinds and conspicuously leaving the vicinity so that the birds would think the coast clear.

On one of the brighter days I started the morning in a blind by the nest of a little brown crane about two miles from camp. Two hours later, having obtained stills and motion pictures of this bird, I jumped to the blind by the nest of an emperor goose and then to one by a black-bellied plover. I finished the day with a western sandpiper, Sabine's gull, oldsquaw, and spectacled eider (Plate VII)—the last two not requiring blinds.

It was all very exciting to an ornithologist. Fortunately, the days were long and sometimes we did not get back to camp until seven or eight in the evening, tired and hungry.

The first impression upon starting across the tundra is that of a marvelous springy sidewalk, and we felt we could walk forever without tiring. We soon learned, however, that the moss closed over our boots and formed insidious suction cups. Then there were ponds to ford and marshy spots that nearly pulled one's boots off. By the time we were three miles from camp we realized we were tired before the day had really started.

Watery Labyrinth—and No Detour Signs

Another difficulty was the endless labyrinth of irregular ponds that always barred the direct route back to camp after a long day on the tundra (page 757). With my binoculars I could spot the white tent from afar, but as soon as I directed my course toward it, I would come to a pond too deep to ford.

There were no detour signs, and I had to learn from sad experience which side of the lake led into another and worse detour. What should have been two or three miles as the crane flew ended up as four or five as the ornithologist plodded.

By the end of the week I had punched two more holes in my belt. I was feeling fine and could tramp two miles without puffing, but then it was time for Nat Browne to return. We had satisfied ourselves that there were no bristle-thighed curlews in this area, though there seemed to be almost everything else.

Nat arrived at 4 p. m. on Friday, June 11, as arranged. We were scarcely expecting him because clouds hung low on the mountains.

In the first plane-load went Henry and David, with half the equipment, bound for Mountain Village to pick up supplies and then to fly to a lake about twenty airline miles north of the town. Camping there for two days, David and Henry could explore for curlews until Warren and I arrived Monday on Nat's second trip.

When the pilot returned for us, he lifted his plane over the Askinuks, followed the shore of Scammon Bay, with its high cliffs, then flew over the pond-filled tundra, across the coffee-colored Yukon, and finally to what we christened Curlew Lake at the base of a new range of mountains.

As we glided down, we spotted the white tent and the two boys on the shore.

Behind the tent the mountain rose at a 60-degree angle, but from a height of 2,000 feet we had seen a whole series of barren, desolate ridges beyond. The lower face of the mountain was a tangle of alders, but toward the top it was typical tundra with patches of snow still defying the sun.

163-year-old Mystery Solved

"What news?" I called as the red Bellanca taxied up to the shore. We were planning merely to take on supplies and head for the next lake.

"Seen any curlews?" I queried, half facetiously, as neither Dave nor Henry replied.

I saw them exchange peculiar glances, and I expected one of Henry's Swedish stories or some joke from David. They apparently had a story, and perhaps they had rehearsed it. Something misfired, however, as it often does in times of excitement, and out it came—"We have found the curlew's nest!"

Who said it? I looked from one to the other in amazement. There was such a degree of sincerity and pent up feeling in the simple little statement that I didn't for a moment doubt its truth. There was no question; the 163-year-old mystery had been solved. They had found the summer home of the bristle-thighed curlew; they had seen the actual nest.

I can't remember getting out of the plane. I can't remember any incidents of the landing, but that story of the discovery, as it unfolded

in the next few minutes, is as clear to me now as if I had been there myself.

Nat Browne had delivered the two boys at the lake at 11 p. m. on Friday, June 11 and they had pitched camp in the afterglow of a sun that had just passed below the horizon. From the air they had seen the ridges behind the mountain and had decided to explore them the following day.

Next morning they were up early and climbed to the top of the ridge behind camp. David started south and Henry north, along the plateau behind the mountain, skirting the alders and scrutinizing the open areas.

Two hours from camp, when they were perhaps a mile apart, they heard, at about the same time, a peculiar whistle, somewhat like that of a black-bellied plover—"P'u-wit"—and spotted a curlew flying toward David.

Henry had heard the bristle-thighed curlew in previous years as it flew over Mountain Village; David was familiar with the Hudsonian curlew from Churchill on Hudson Bay. Neither one doubted they had found the long-sought bird. They froze in their tracks.

The curlew circled and set its wings for a level, plateau-like area a mile away. This area differed from most of the tundra in that it had some broken rock protruding and had numerous clumps of black lichen spotting its surface like shadows.

Hours of Watching, Then a Dash!

A couple of hours of intense watching with binoculars ensued. Meanwhile the watchers kept out of sight, but drew steadily closer.

The curlew was plainly more interested in this one piece of several acres of tundra than in any other. Even after long sorties, he kept coming back to it.

Occasionally a parasitic jaeger, a hawklike gull, would skim over the tundra. The curlew paid little attention to it until it approached a certain place. Then he would call excitedly and fly at the jaeger and drive him away.

There was now little question in the boys' minds that they had found the curlew's nesting ground. Somewhere before them the female bird was sitting on her long-sought eggs.

After spending years hunting birds' nests one develops an understanding of bird behavior. Gradually, as he watched the guardian curlew, David eliminated one spot after another until he felt he knew just about where the nest should be.

Even so, it is not always easy to find the actual nest. Sometimes when a bird sees an enemy approaching, it will sneak off its nest and flush ostentatiously from quite a different spot. Again, the bird will freeze and rely upon its

The Curlew's Secret



A Bird of Mystery No Longer—the Throat-thighed Curlew in Its Alaskan Home

A BIRD OF MYSTERY NO LONGER—the throat-thighed Curlew in its Alaskan home. The bird is shown in its natural habitat, standing on a yellow rock. The Curlew is a large bird with a long, dark, downward-curved beak and mottled brown and tan plumage. It is shown in profile, facing right, with its long legs visible. The background is a soft, hazy landscape with a blue sky and distant hills.



▲ From the Newly Discovered Eggs I secured
This Downy "Four of a Kind"

These four eggs were found in a nest
of a bird of the same species as the one
which I found in the nest of the same
species in the same place. The eggs were
all of the same size and shape.

▼ End of a Long Quest Came with Finding
of These Four Eggs

The eggs were found in a nest of a
bird of the same species as the one
which I found in the nest of the same
species in the same place. The eggs were
all of the same size and shape.





★ Prong-billed Albatross, the Monotonous Bird Was Invisible Three Feet Away

Walter M. Pittman, a naturalist, says that he has never seen a prong-billed albatross in the North Pacific. He says that the bird is so monotonous in its appearance that it is almost invisible. He says that he has seen many of them in the South Pacific, but that they are so common that they are almost invisible.

✧ First Nesting of Its Kind To Be Seen by Man

A prong-billed albatross, the first of its kind to be seen nesting in the North Pacific, was found by a naturalist. The bird was found in a nest of dry leaves and twigs. The naturalist says that the bird is so monotonous in its appearance that it is almost invisible. He says that he has seen many of them in the South Pacific, but that they are so common that they are almost invisible.





Spotting the Bird. From a sketch by the artist. This is a sketch of a bird, possibly a quail, standing in a field of low-lying vegetation. The bird is facing left, and its long, slender neck is extended. The background is a soft-focus landscape with more vegetation and a hint of a distant horizon.

A Pintail, I made time Nests beside a Swampy Woodland





* Tax Visitor from Russia "Wagwags" as She Walks

Like other members of the wren and junco family, the yellow throat wren has a warbling, chirping, whistling and other alarm notes. It breeds in numerous states and Alaska but winters in Central America. In the north the yellow throat is the first

† Her Name Is a Chesty Fellow. Hence the Name "Pectoral Sandpiper"

In January, the study is later to be conducted in a
 these part in a similar pattern. The study will be
 over the tropical, alling, and the study will be
 question in the study in the study. The study will be
 the in South America, South America, and New Zealand.





A Crane with a Stern Guarding Two Large Eggs on an Alaskan tundra.

The crane is a common sight on the tundra of Alaska, where it is often found in large numbers. It is a very hardy bird, and is able to survive in the most extreme cold. The crane is also a very intelligent bird, and is able to find its way through the most difficult terrain. It is a very beautiful bird, and its long neck and legs make it a very striking sight. The crane is also a very important part of the tundra ecosystem, and its presence is a sign of a healthy environment.

protective color to escape detection (page 758).

David had no way of knowing how bristle-thighed curlews would react. There is one technique, however, that is often effective when nothing else works—surprise. If a bird can be faced with an unusual situation suddenly, its reaction is likely to be less favorable to itself than if it has a moment's time.

David removed his rubber boots lest they impede his motions, beckoned to Henry, who had now moved up to the same side of the promised land, and sprinted the hundred yards that intervened between him and the chosen spot.

The reaction of the bird was as he had hoped, and the result is now history. She flushed twenty feet in front of him, and he found the curlew's nest.

In the nest were four eggs nearly as large as those of a domestic hen. Dull greenish with spots of gray and dark brown, they blended well with the tundra (Plate III).

The nest itself was a mere depression beside one of the clumps of black lichen and a mat of Alpine azalea (*Loiseleuria procumbens*). It measured 6½ inches across and 2½ inches deep and was very smooth on the inside, though made of the surrounding reindeer moss and grasses which ordinarily present a rough appearance.

Birds So Tame No Blind Was Needed

After finding the nest the boys hurried back to camp, fearful lest the jaegers should steal the eggs, and returned with blinds and cameras. They did not realize that no blind would be necessary for a bird that perhaps had never seen a human being at close range.

Since many of the South Sea Islands, where these birds winter, are uninhabited, and since not even an Eskimo would visit this forbidding tundra, we were doubtless as unusual to the curlews as the curlews were to us. We set up a natural-admiration society, the birds scrutinizing us as closely as we watched them.

We soon discovered that the eggs were already pecked and the young birds could be heard peeping inside the shells. This perhaps helped to tame the curlews because birds' attachment to the nest is strongest at the time the eggs are ready to hatch.

Since we needed a specimen to deposit in the United States National Museum, to serve as the type, it was necessary to take one of the eggs immediately and remove the chick through a door in one side.

In the meantime, we located another nest. After seeing this second pair of curlews on the tundra, we spent hours dragging the area with a rope and scrutinizing every depression

before Warren Petersen finally spotted the incubating bird. Flattened on her nest three feet in front of him, she matched the moss and grasses so well that at first he wasn't sure whether he was looking at a bird or just another piece of tundra (Plate III).

In the second nest the jaegers had stolen two eggs and a third had a large hole in it. The fourth was pecked and ready to hatch, like those in the first nest. What worried us now was the danger that the jaegers might get the remaining egg, or even all those in the first nest, before we could see and record the downy young.

An Ornithologist "Mothery" a Curlew

We were on the point of getting up camp next to the nest, where we could take turns carrying it when it occurred to us that it would be easier to carry one of the eggs back to camp and hatch it in an incubator.

I had in mind my experience in Quebec, where I successfully mothered a baby red-throated loon in my sleeping bag.*

Returning to camp I heated stones over our gasoline stove, wrapped the stones in a towel, and placed them in one of our spare water buckets. I made a nest for the egg out of cotton and an old sock.

At night, instead of getting up every few hours to heat stones, I placed the nest in an empty tin can and took it to bed with me in my sleeping bag.

All the next day I heated stones, and as the little bird squirmed inside the egg and its tiny "egg tooth" gradually cut through the shell, I helped it along with judicious use of forceps. I wanted it to emerge without ruining the shell for scientific purposes.

The youngster was not yet out of the shell when bedtime came, so once more I took the egg into my sleeping bag. The following day I had the satisfaction of making the final delivery and claiming for myself the distinction of being the first and only midwife to a bristle-thighed curlew.

In the meantime, Irovidelet watched over the nests, the jaegers did not get the eggs, and they hatched normally. The parent birds by this time paid no attention whatsoever to Henry and Warren, who obtained some truly remarkable photographs of the birds with their young and of themselves less than a foot away (Plate III).

During this time David covered many ridges and, though he found no more nests, he saw a total of about twenty bristle-thighed

* See "Sea Bird Chicks Off Another's Litterbox," by Arthur A. Allen, *National Geographic Magazine*, June, 1948.



Dr. Allen Serves as "Midwife to a Curlew"

Dr. Allen, a member of the U. S. Fish and Wildlife Service, is shown here holding a Curlew chick. The chick was taken from a nest in the National Museum, Washington, D. C. Taken from a nest in the National Museum, Washington, D. C. Taken from a nest in the National Museum, Washington, D. C.

curlews. This indicates that the area we discovered is undoubtedly a part of the main summer range of the species, which may extend northward for several hundred miles, and even into the foothills of the Brooks Range.

Why these birds should select so remote, warm, luxurious shores of Tahiti and the other South Sea islands, fly 5,500 miles over the open sea, and arrive at one of the most northern stretches of tundra in North America, I cannot say. I have heard and still I feel I cannot understand.

The rest of our trip would have been quite different had it not been that we were working

with such exciting birds—whistling swans, Pacific grebes, and an emperor goose that has come as tame as the curlews.

Since there was no need of continuing northward up the range, Nat Browne lent us back to Igloo Lake, where we had left so much unfinished business. The next day it rained, and it kept raining for a week, with hardly a break in the clouds.

Back to Civilization Just in Time

The following Sunday it cleared and we had a full day with our cameras before the plane came for us at 6 p. m.

On the first trip Nat took Warren and Henry and most of the baggage back to Mountain Village.

"How you kept out your sleeping bags," he called as he left.

It had an ominous sound, but the sun was still shining brightly, although we did notice a few clouds peering over the Aspin.

At 10 p. m. the plane came for us. We loaded up the equipment into the plane, moved across the lake

and up over the mountains, and then discovered the reason. A great sea of fog concealed everything.

Overhead the sun shone as brightly as ever, but we had no idea. Later our valley would have been filled with clouds, and we would have been stranded without provisions or sleeping bags.

How serious it may have been we did not learn until after we had returned to the states. Then a letter from Warren Petersen told us that we were the last people to move and that for two weeks thereafter all planes were grounded.

Lascaux Cave, Cradle of World Art

By NORBERT CASTERET

With illustrations by Victor de la Motte, the sculptor of Montmartre, and George

IN THE hills of Dordogne, France, prehistoric caverns riddle the soft rock like holes in a cheese. Beside the little River Vézère the Lascaux Cave has surpassed all others in one respect. On its walls, fresh as the day cave men of at least 20,000 years ago outlined them on the rugged rock, is the finest collection of prehistoric drawings ever found.

This realistic art, done from life, shows what vast changes have come since Old Stone Age artists recorded subjects familiar to them but now unknown within a radius of thousands of miles.

Savants, provided with such new data, strive to solve the secrets of ages compared with which those of the Babylonians and the Pyramid builders are almost modern.

With Dr. Maynard Owen Williams, of the National Geographic Society, and his charming wife, I rode south across France to see these wonders for the first time. A cold wave had frozen the gutters of Paris, and beside the wintry Vézère shiny stalactites of ice glittered in the weak sun of January. It reminded me of a day when we had swum in glacial waters at Montespan, 26 years ago (page 776 and map, page 774).

Out of the Mouths of Children

"Wise men," I said, "are delving deeper into the long-forgotten secrets of prehistory. But it was out of the mouths of youngsters that the first announcements of much prehistoric art have come."

"You know," exclaimed my American friend, "that is a story! You have spent most of your life squirming through this prehistoric underground. You have a tremendous following among French youth. You are the man to tell it."

"But before you describe the wonders of Lascaux, you might tell how children, even quaint schoolboys, helped discover such high-brow relics of low-browed cave men."

So here it is:

France, rich in prehistoric caverns, was the cradle of all art. It shares with Spain those magic Pyrenean grottoes upon whose rocky walls Old Stone Age men left sketches and paintings. Today they are important clues to man's beginnings. These prehistoric art treasures, relics of the Aurignacian and Magdalenian epochs,¹ go back 15,000 to 30,000 years. Prehistorians study these ancient re-

lics—and sometimes discover new grottoes themselves.

But through curiosity, love of adventure, and unspoiled talents for observation, mere youths have endowed the solemn science of prehistory with sensational finds.

These amateurs have not been able to interpret the secrets of the past, but they have often pointed the way to new wonderlands.

A Little Girl Leads the Scientists

In Spain, a certain Marcellino de Sautuola, a lawyer, had a passion for prehistory. In 1879 he was digging away in an obscure cave not far from Santander.

Its name, Altamira, until then hardly known, has since become a household word.

One day, fateful in the epic of man's gropings toward the dawn of time, Sautuola took his little daughter into the spooky hole.

Soon tired of watching her father scratching away, María stretched out on her back. Perhaps peering the shadows with creatures of her own dreams, she looked up at the cracked and peck-marked ceiling above her.

Suddenly she cried out that she saw, painted in red and black, the forms of bulls.

Busy with his own dreams, Sautuola paid little attention. For some years he had known many grannies of the retreat. Of course no printing of this kind decorated its vault. Shadows perhaps, but nothing more.

But an excited child is not easily hushed; so he looked up. The fame of the wonders he then saw was to sweep the world.

Sure enough, there were the outlines of "bulls" or, on closer observation, lions, whose high-humped shoulders admitted no mistake. The lawyer-archeologist looked long at this vivid mural. He had never noticed it, because, in order to see it best, the observer must get away from its irregularities.

¹ See "Parade of Life Through the Ages" by Charles R. Knight, National Geographic Magazine, February, 1947.

² The Aurignacian epoch, noted for its well-defined flints, was so named by Abbé Henri Breuil from the French cave of Aurignac. This epoch corresponds to that of the Cro-Magnon (Great Hunk) Man, perhaps 20,000 years ago. About 8,000 years ago comes the Magdalenian epoch, whose culture spread from Spain to Siberia. It takes its name from a rock shelter near the monastery of La Madeleine near Lacourt. In this article the author uses a conservative chronology. Some authorities date the Late Old Stone Age as long ago as 100,000 years.



Three Main North + Eastern Sides 1991 on a Prehistoric Clay

Theorem 1. Let $\{X_n\}_{n \geq 1}$ be a sequence of independent random variables with $E X_n = 0$ and $\text{Var } X_n = \sigma_n^2$. Let $S_n = X_1 + \dots + X_n$ and $\sigma_n^2 = \sigma_1^2 + \dots + \sigma_n^2$. Then, for any $\epsilon > 0$,

$$P(|S_n| \geq \epsilon \sigma_n) \leq \frac{1}{\epsilon^2} \sum_{k=1}^n \frac{\sigma_k^2}{\sigma_n^2} \leq \frac{1}{\epsilon^2} \sum_{k=1}^n \frac{\sigma_k^2}{\sigma_k^2} = \frac{1}{\epsilon^2} n.$$
 If $\sum_{k=1}^{\infty} \sigma_k^2 < \infty$, then $\sigma_n^2 \rightarrow 0$ as $n \rightarrow \infty$, and hence $P(|S_n| \geq \epsilon \sigma_n) \rightarrow 0$ as $n \rightarrow \infty$.

But by 1992, a week is no dream
 for the Millionaire, who eventually can
 hold his own picture show.

Second, the study by Munnich et al. (2000) found that the use of the *in vitro* fertilization process over the past decade had produced over 100,000 children in the United States.

On the other hand, the presence of a large number of small, irregularly shaped particles in the soil may indicate a high degree of soil erosion or a high degree of soil compaction. In such cases, the soil may be more susceptible to erosion or may have a lower capacity to absorb water and nutrients. Therefore, it is important to consider the size and shape of the particles when evaluating the soil's properties.

Although not the first time, it is the first time that the Department of Energy has been asked to provide information on the impact of its activities on the environment.

11. $\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$ (Squeeze Theorem). $\lim_{x \rightarrow 0} \frac{e^x - 1}{x} = 1$ (L'Hôpital's Rule).

A Child Crawls Underground

It is not difficult to find a counterexample to the above claim. For example, let \mathcal{A} be the algebra of all subsets of \mathbb{R} that are either countable or have countable complement. Then \mathcal{A} is a σ -algebra, and \mathcal{A} is not separable. However, \mathcal{A} is countably generated. In fact, let \mathcal{A}_0 be the algebra of all subsets of \mathbb{R} that are either finite or have finite complement. Then \mathcal{A}_0 is a countable algebra, and \mathcal{A} is the σ -algebra generated by \mathcal{A}_0 . Thus, \mathcal{A} is countably generated.

It was the reason for the success of the first trial, and the second trial was a success. The first trial was a success, and the second trial was a success.

Revering him, the crowd at the funeral home, the growing number of survivors, the death toll, the loss of the ship.



The Big Red Bovine Is Deformed by Wall Slant and Perspective

It is a common mistake to think that a picture is a true representation of the thing it represents. The picture is a true representation of the thing it represents, but it is not a true representation of the thing it represents.

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Vacation Days Well Spent

A group of four young men and one woman spent their vacation days in the mountains of the West. They had a very good time and were very happy.

In September, 1900, a group of four young men and one woman spent their vacation days in the mountains of the West. They had a very good time and were very happy.

It is a common mistake to think that a picture is a true representation of the thing it represents. The picture is a true representation of the thing it represents, but it is not a true representation of the thing it represents.

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In Three Clusters of Water-carved Caves, Prehistoric Man Left the Finest Known Old Stone Age Art

While the valleys—the Vézère, the Arno, and the Beane—were flooding, water carved grottoes in the calcareous rock—Bordeaux, for instance, still unknown, men carved and painted the cave walls with animal figures and all vegetable life was being. In the area of Les Eyzies, the best-known prehistoric art museum, number one. Greatest of all, so far, is the Lascaux Cave, in cave-molded limestone, above the quiet town of Montignac. Places marked with an open square are cave locations.

"Drawings! The whole wall is covered with them!"

Leaving his plane table, calipers, and pencils, the retired engineer ran to join his son.

There was no doubt about it. His youngster, Paul, had just discovered—after how many millenniums?—a herd of bison, horses, stags, and young bucks in this grotto of Vézère now recognized as one of the most noteworthy in all the annals of prehistory.

High School Boys Find the Famed "Clay Bison"

Years later, another father and his three sons were gathered outside a cavern in the Ardennes, called the Tuc d'Audoubert.

Since a stream poured forth from this hole, the cavern had never been explored.

But on this July day in 1912, Camille Régouin and his sons Max, Georges, and Louis, high school students at Toulouse, decided to cruise up the subterranean river in a homemade ship of fortune.

Since they did not know into what they were headed, they advanced with caution. Slowly

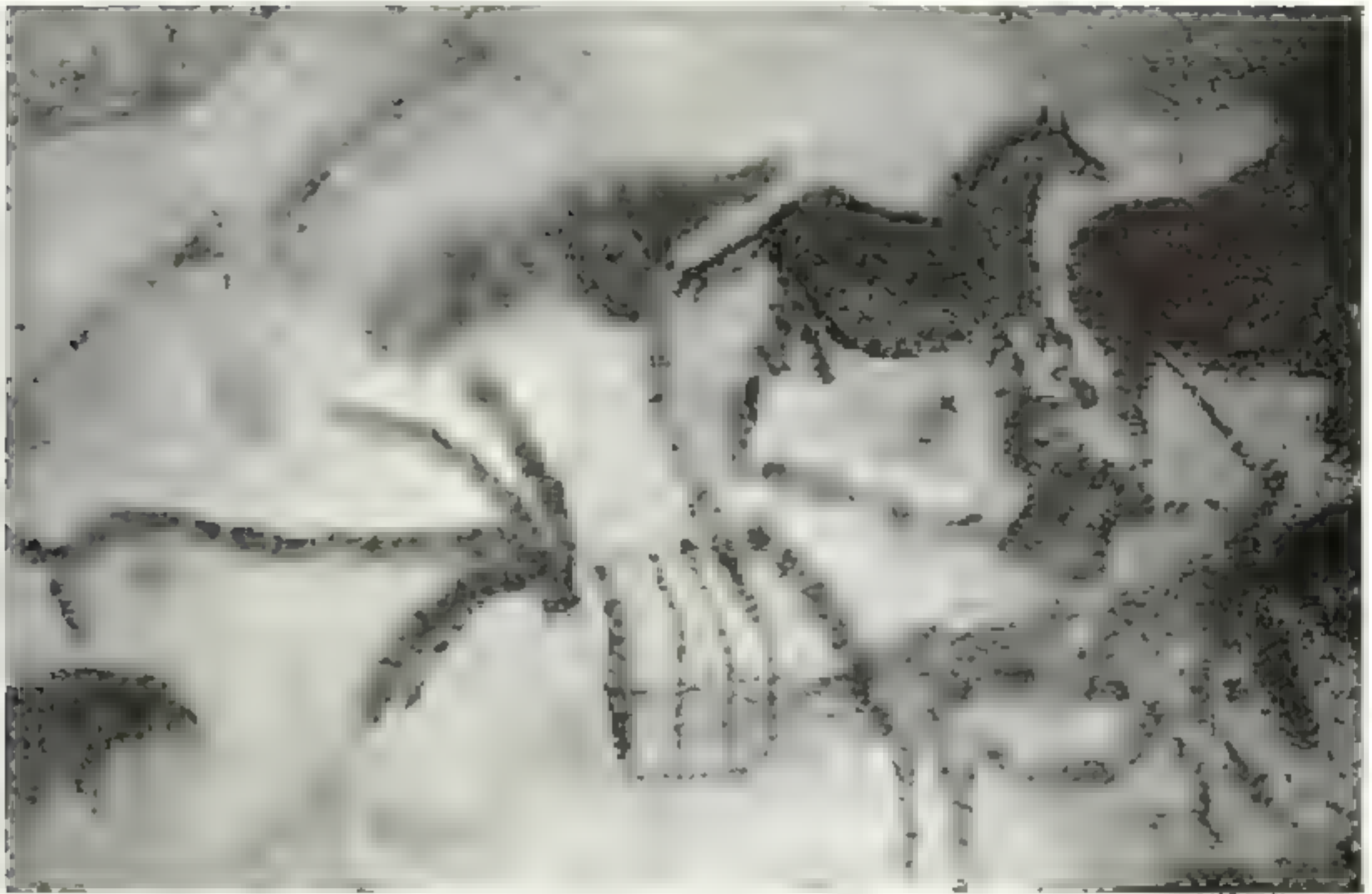
they floated along on the black water. After a winding and thrilling voyage, they left their boat to proceed on foot. The narrow corridor soon spread out into a vast chamber, its high ceiling glistening with dazzling stalactites.

The adventures of the day had surpassed all expectations, but the job was only begun. Tempting avenues led off in all directions.

One must know the fascination of such adventures carried out in the bowels of the earth, to realize that from that day forward the whole world of the third-century spelunkers centered in the Tuc d'Audoubert grotto. Their true love was a hole in the ground.

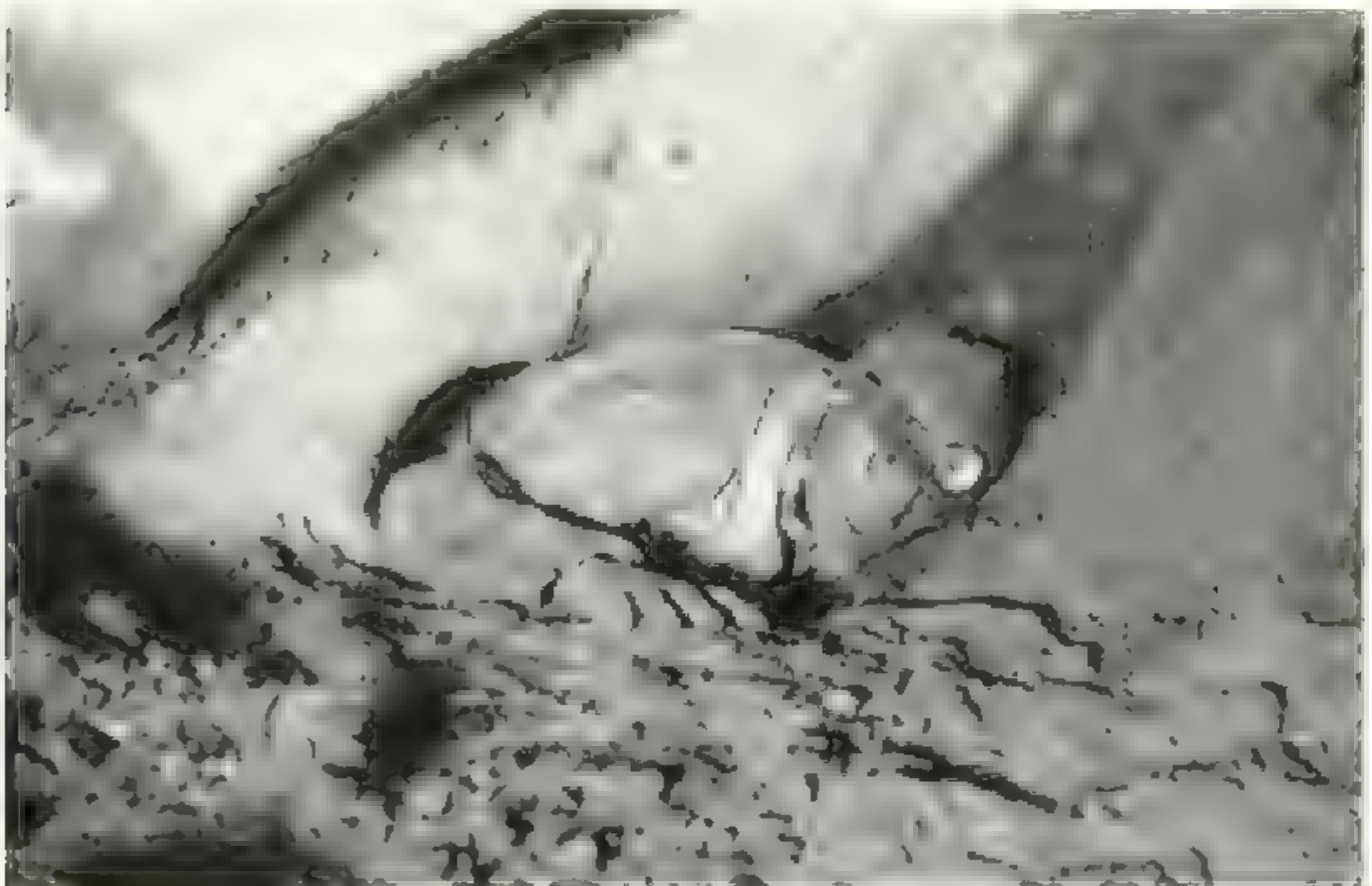
One October day in 1912 when they had scrambled up a steep chimney, they found themselves in a small chamber from which there seemed to be no exit. But one of them, sticking his body between two heavy pillars which had almost grown together, found that the gallery went on.

After breaking away the restricting columns, the young explorers squirmed out flat on



Prehistoric Artists of This Region Often Painted Ibexes

In this Iacaux Cave, the left appears drawn by flint and the right by charcoal. Scientists do not know the meaning of the large rectangle, and it may be a bull. It may have a head with a horn.



An Underworld Explorer Crawls Into a Worm to Reach Subterranean Galleries

The author's most thrilling entry to one cave (Montepan) was made alone by swimming through a hole blocked by glacial water, with matches and candles and in a falling rap race.

their bellies. Climbing with great difficulty, they came to the end of this "cathole." Standing erect, they advanced through a vast cavern.

Suddenly they stopped in front of two superb bison modeled in clay—two masterpieces of prehistoric statuary, the work of Magdalenian hunters.

The excited boys hastened to tell their father.

All four at once set out for the cave. Again they had to embark on the underground river, scramble up the steep chimney, and squeeze into a crooked gallery through whose throat they could pass only by crawling on elbow and thigh.

The slender Lals were able to squirm through, but the tall figure of Count Bégouën was too much for the rocky gullet to swallow. Try as he would, he could not pass.

His sons, safely beyond the obstruction, laughed on his arms. Little by little the passage was made without broken bones or scraped skin. But it was by so close a margin (and I can vouch for this point, since I got the facts from the stately hero himself) that, passing heavily but safely through the hole, Count Bégouën noticed that his trousers had remained behind.

The Bégouën Boys Do an Encore

Two years later, close to the cave of the clay bison, the Bégouën boys noticed a natural well which might communicate with the adjacent cavern.

A sounding line showed a depth of less than 70 feet. They unrolled their rope, and the eldest of the boys, with the help of a companion named François Camel, let himself down into the abyss.

Half an hour passed. Three-quarters. Still no sound from below. As Jacques and Louis anxiously prepared to descend, joyous shouts rang through the woods.

Covered with mud and with their clothing torn, Max and Camel arrived happy as larks.

Said they: "The well does not connect with the cave of the bison at all, but with another, big and beautiful, decorated with prehistoric drawings. From there we crawled into the light of day."

Everyone was happy. Still another cave with prehistoric paintings on its walls!

"Splendid!" said Count Bégouën, "Since this cavern has no name, I name it, in your honor, the Cave of the Three Brothers" (*Cave des Frères*).

Among the many splendid paintings on its walls is one of a dancing sorcerer wearing a mask, a silhouette since famous among prehistorians.

Vacation time is obviously a favorable season for discovering grottoes. That is why, one July day in 1922, a youngster climbed a hill near Cabrerets, a dozen miles from Cahors.

A True Explorer at 14

With a candle in his pocket, he deliberately set out to explore a rocky crack he had found. That a mere youth should be doing such a thing may seem surprising. But his catechism teacher, the Abbé Lemozi, was also a distinguished prehistorian. He taught his students the pleasure of underground exploration.

That is why, this Thursday morning, the youngster plugged along toward what looked like an ordinary fox hole. "But," he said, "it must be a cave."

The entrance was so narrow that his candle might have burned him, but he squeezed inside and down a steep descent into a high vaulted chamber.

To please his curé, young David had ventured underground. But this cavern was so vast that his very silence was terrifying. Excited, he reported to his friend the curé.

Led by the 14-year-old, the Abbé Lemozi began a complicated and toilsome exploration through a labyrinth in which the small youth had a considerable advantage.

Finally the Abbé and his young pupil entered a cavern as captivating as Ali Baba's. Neither jewels nor gold was their reward, but a procession of mammoths, horses, bison, and bears, carved by flint tools of the Stone Age or painted in red and black.

Thus, a mere youth—on purpose—made a most sensational prehistoric find.

Face to Face with a Faceless Bear

In that same year, 1922, I entered the hitherto unsuspected Cave of Montespan. In a lonesome exploration I followed a subterranean river for nearly two miles under a hill in Haute Garonne.

A 35-page story of this adventure, involving a sightless swim through a water-filled siphon with my candle wrapped in a rubber bathing cap, appeared in the *National Geographic Magazine*.*

The following year I returned, for there were signs that this two-mile underground tunnel might contain relics of prehistoric man.

In those days I had trained a team of four friends in my methods of exploration, and since they were all excellent swimmers, they

* See "Discovering the Oldest Statues in the World," by Soubert Cahen, *National Geographic Magazine*, Vol. 35, August, 1924.

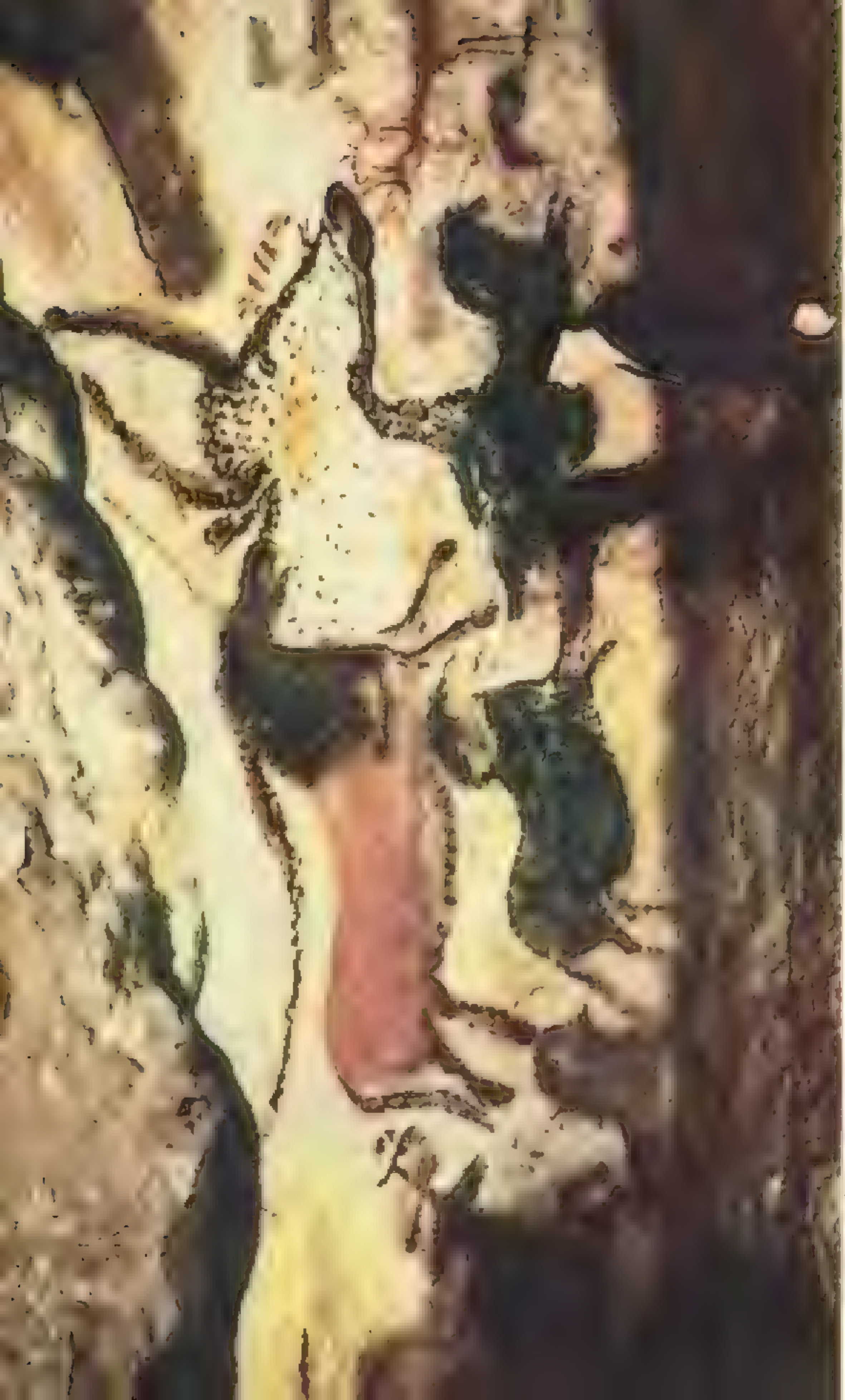


Author and Linguistics Editor, *Journal*

© 2005 Blackwell Publishing Ltd *Journal of Internal Medicine* 257: 105–112

Michelangelo of Cro-Magnon Day: Decorated This Sistine Chapel of Prehistory

Within the walls and among the trees of the Great Forest there are the ruins of a city
ruined by barbarians during the Old Stone Age about 10,000 years ago.



6. The Great Hall, Lascaux, France

A Great Bull, Portrayed by Prehistoric Artists 8,000 or More Years Ago, Is Obscured by Galloping Horses, Drawn Millennia Later

By the way, the artist's name is not known

Galileo Crystal Centuries Antiquing Prove the Bull's Head's Age

© 1995 by The American Museum of Natural History



A Schoolgirl Studies Wild Ponies Now Long Extinct

© 1995 by The American Museum of Natural History





Seen at Combe-Capelle, France

Reproduction by Maximal from the same

◆ Prehistoric Artists Knew Their Bison, Gone from Dordogne since History Began

Whether two enemies are calling it a day after combat or hurrying away to new pastures is unknown. Evidently the humpbacked beasts were painted from art by one familiar with them.

▼ Was the Arrow Slinger Who Scarred This Painting a Vandal or Magician?

What seem careless scratches may be arrows through which a hunter sought to kill his prey. Much prehistoric art was religious when religion was there. Some Monsieur Laval's niece shows the scale of the figures.





— Natural Geographic picture

5

Illustration by Raymond Osmo Williams

Marcel Ravidat, Then Seventeen, Discovered This Greatest Gallery of Prehistoric Art in 1940

Like the *Bushman* (above) now an Argentinean, Ravidat, joined with Germaine Marchesi's head. Above the *Monkey*, the *Horse* (right), a two-headed man may represent a trip. Ravidat's words and darkness complicated the artist's work.



★ Standing in the Dark Void of Luvania, the Jovial Conservator and His Pupils Are Revealed by Blinding Flashlight

Behind her a giant hall of light. It seemed a bygone
of a time. When the giant conservator was a young
child, he had come to her school, and of it
a great teacher of peace to her. At last, however, a
great of human is known through, they were in the
light of the world, and the world and a bright
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★ A Fallen Chip Mares This Bull's Head, Portrayed with Brains, Fingers, or Primitive Air Gun of Hollow Bone

Perhaps the stone, and the stone, the stone, the stone,
such things come from a time before men became
farmers. Men's work, their work, their work, their work,
of men were used. It is probable that at the time
and was not for men's use, but for the use of the
through society, diving in, or diving,



Illustration: Monty Roberts

VIII

Illustration: by Margaret Owen Williams

★ This Arrow-marked Stallion Has Been Chasing His Mate (Left) for 15,000 Years

Nobody knows by what light the cave men depicted the wild animals that flourished in their day. By torch-bonfire, or dry mass floating in fat? No smoke or no smudge the walls of Lascaux Cave.

★ Such Overlaid Drawings Cause Much Controversy among Savants

Is a pregnant cow a prayer for fertility? Are her arrows a totem, a heritage from an earlier deer past-age? Such questions are still unanswered, for the cave men, perb artists, could not write.



burned—if one may so describe it—with the desire to test the glacial waters and water-charged siphons of Montespan.

However, on the day agreed upon, only Henri Godin the next daymons of all for subterranean adventure, could join me.

When we emerged from the cave with our teeth chattering from the cold, we were thrilled as well as chilled. We had just found clay statues of lions and a headless bear, similar to the famous clay lions of the cave of Tuc d'Audoubert (page 776).

Within a month, with pick and shovel, my friends and I had so lowered the level of the stream that eminent scholars were able to wade up what had been a water-charged siphon.

Because of their passion for learning, these distinguished prehistorians were not stopped by the cold subterranean stream. They found these modelings of lions and bear still recognizable although experts, granting them an antiquity of 20,000 years or more, called them "the oldest statues in the world."

Trumney Hits the Jack Pot

The Cave of Thieves (*Rouge*—Cave of *Ladron* or *Ladronne*—Thief) is not far from that showpiece of Roman architecture, the Pont du Gard.

Known for centuries as a haunt of brigands and a hide-out for Protestants during the War of the Camisards, the cave was already familiar to archeologists.

In April, 1940, some high school students of Nîmes cycled along the banks of the Gard, looking for likely caverns to explore. Entering La Balme Ladronne, Suter, Roque, and Martin followed it back for 300 feet. At its inner end they felt a draft blowing through a tiny hole in the terminal wall.

With his bare hands Suter went to work to remove the clay cork which closed this bottleneck.

Roque and Martin tried to talk him out of it.

"Come on, don't be foolish! It is getting late. We'll come back later."

Overvoted, Suter had to agree. But two weeks later they all returned with picks and shovels. They were cramped by the tight walls. The work was hard. But they had become willing slaves of the demon of adventure.

Suddenly there was no more clay in front of them. Nothing! They stretched their hands through into dark emptiness. Silently, but for the beating of their hearts, they entered a high, chilly hall, like an underground cathedral.

Suter's foresight had paid off. On the rock walls they made out the crude paintings of elephants, rhinoceroses, stags, and ibexes as well as of some strange reptile ten feet long.

This cavern of Grot added a bright chapter to the dusty archives of prehistoric art discovered by youngsters.

A Fox Hunt Wins Fame

Some of the great discoveries of young explorers were the result of mere chance. The heroes of Lascaux, accessories before the fact, deliberately sought out the underworld even if it was only as the haunt of fox or badger.

How amazed the young scamps would have been if, on that morning of September 12, 1940, when they took their dog Robot into the domains of the Countess Emmanuel de La Rochefoucauld, anyone had predicted the results of their poaching!

As in *The Three Musketeers*, they were four: Marcel Ravdat, 17; Georges Agnel, 16; Jacques Marsal, 15—and Montignac 14—and Simon Comas a 15-year-old cousin from Paris.

Arrived at the top of a hill a mile or so from Montignac and not far from the old manor of Lascaux, the young men wandered amid the stones and juniper thickets. While sniffing around, Robot fell into a hole hidden by bushes.

Loudly the young fellows called their dog. There was no answering bark. Then Ravdat, the oldest, spread aside the brambles and discovered a sort of natural well into which he cautiously descended.

Arrived below, with no other light than a box of matches, he found his dog. A tempting corridor lay ahead, but his matches were gone.

Next day, provided with a rope, candles, and an oil lantern, the four boys set to work.

Yesterday's young fox hunters now transformed into speleologists the Greek word for cave lovers—edged along a ridge of fallen earth, scrambled between the piled-up floor and the rock roof, and at about 50 feet below ground level entered the first hall.

There, by the feeble beams of their meagerly light, they suddenly made out on the whitish walls the most extraordinary array of prehistoric paintings and drawings that modern man has ever seen up to now.

An immense cavalcade of fantastic animals—a veritable menagerie of long-forgotten epochs, stretched out before the astonished eyes of the young men. Everywhere, lifelike outlines stood out from the walls, and the boys moved in a hazy atmosphere of dream paintbrush fixed on rugged rock. As excited, they



Ann Bane of a Cave Run Caves the Cistercian Home for 'Thou'...

With the new kind of cooperation between the two agencies, the two agencies are now working together to develop a new kind of cooperation between the two agencies. When the two agencies have been in the right kind of cooperation, the two agencies are now working together to develop a new kind of cooperation between the two agencies. The two agencies are now working together to develop a new kind of cooperation between the two agencies. The two agencies are now working together to develop a new kind of cooperation between the two agencies.

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De-quantization is done by multiplying the quantized value by the quantization factor. The quantization factor is the ratio of the maximum value of the quantized data to the maximum value of the original data. The quantization factor is calculated as follows:

[illegible]

There is no M. I. and our early and continued by two men who would not be so far from the and examine the means of solution and planning. I have written myself as that he has never had a better opportunity.

The 15-year-old patient with weight loss and enlarged lymph nodes was the representative of the lymphoma group who was in good luck. Her 15-year-old mother was the first in the family to get sick.

1. The first step is to identify the variables involved in the problem. In this case, the variables are the number of hours worked (H) and the number of hours of sleep (S). The goal is to maximize the number of hours of sleep (S) while minimizing the number of hours worked (H).

$\mathcal{H}_{\mathcal{A}} = \{ \mathbf{h}_1, \mathbf{h}_2, \dots, \mathbf{h}_M \}$ and $\mathcal{H}_{\mathcal{B}} = \{ \mathbf{h}_1, \mathbf{h}_2, \dots, \mathbf{h}_M \}$. All inputs of the network are given in the form of \mathbf{h}_i for $i = 1, 2, \dots, M$. The output of the network is a vector \mathbf{y} of size M . The output of the network is a vector \mathbf{y} of size M .

$$\frac{1}{\Gamma(\alpha)} \int_0^t (t-\tau)^{\alpha-1} f(\tau) d\tau = I_{0+}^\alpha f(t),$$

There were no steps had been cut in the steep rather slope, but the two men were not too bold and had to be helped for they were covered with mud and the 2nd was a big fellow. I found that a horse was with us, but later we could see in the upper door of the cave.



Is This Rhinoceros Wearing a Woolsack? Arctic Clue or a Tropical Sun Tan?

If woolly he lived in arctic France during a glacial epoch, perhaps 10,000 years ago. If not, he was drawn when a warmer climate moved across France. His two horns and familiar shape identify him.

Before we enter we are warned that the cave is not to be touched. The walls are covered with the bones of the animals that lived there.

The French Commission, looking for a cave among the most famous monuments of France, immediately saw what was essential to protect the important treasures.

Since none may enter without the Conservator's permission, neither unintentional damage nor willful vandalism is to be feared. The essentials—an entrance passage, a staircase, and a motor road to the entrance—may come later.

In the Underground Sanctuaries

A dull sound echoed through the subterranean corridors as the heavy door swung to behind us. We were shut out of our old life and into a new one. The modern life of the world was behind us. We felt bad as if from the world's end. The light from the grange of time, was a dim light. The towering tip of the mighty mountain. How many millenniums here unmarked

by the sun and stars, had faded away. The old life of the Age ancestors decorated these ancient walls.

Our guide, a jovial companion, suddenly became serious.

In the sunlight he had overflowered with cynical quips. Now in the dark he gave us a serious introduction to the prehistoric masterpiece.

He directed the beams of his lamp toward the wall. We gradually saw the outlines of a gigantic bull traced in black on the tawny rock. One could not miss the impressive force and realism of this archaic art.

It is the largest drawing of all. The artist was willing to measure such an aristocrat in these figures. "It is 18 feet long" (Plate VII).

We were amazed at the fidelity and fine proportions of the giant bison, traced by what light? and with the aid of what light? on a rough, cracked, rugged, and scale wall.

Soon, even in dark corners remote from our



This Incredible Feeding, a Wounded Raven Charges the Hawk

The speaker, who has been a member of the National Association of Broadcasters since 1954, said he had been a member of the National Association of Broadcasters since 1954. He said he had been a member of the National Association of Broadcasters since 1954. He said he had been a member of the National Association of Broadcasters since 1954.

Just in time. We could make out a few people
talking and walking.

They were the same size, shape and form as the other, except that the second one had a small hole in the side which seemed to have worked out of a machine and had a small hole in the side.

The third creature was a tall, thin being on earth, with two rectangular horns springing from its forehead like those of the legendary unicorn. Its sides and bloated belly were covered with leopard spots.

What had the prehistoric artist tried to picture? It is still a mystery.

Once again we gazed at the giant ball and
pondered its size. But Mr. Laval led us along
past the ~~rest of the~~ ^{rest of the} island and our
strength almost cut up, we gazed in open-
mouthed admiration.

Fifteen or 20 feet above our heads we saw a host of other figures mounted in the same varied positions. On the ceiling, figures

painted in red and black and it was in-
tensible for me. I was very happy to see
you. I was very happy to see you.

Since there are 170 U.S. Virginian figures, the most likely explanation is that they date back 170,000 to 100,000 years—and were collected from a deposit of recycled hair.

True, these paintings had been covered with ~~various~~ fine natural colors of brown and white or tan-gray. And the remarkable effect had sealed up by a cave-in was exacted from destructive elements.

14. 4. 1961. 1961. "Zoo"

Recessed wall paintings worn on the surface of the cave and chipped off the color and the light or sunlight faded its tones. So these prehistoric frescoes have been preserved better than in any other cave yet known.

horses like Shetland ponies, a breed of horse



To Reach the Painting of a Wounded Bison, Explorers Use This "Parrot Ladder"

The rhinoceros and the bison (see also the hunter pictures (page 796 and 797) were found at the bottom of the narrow well. A few visitors were allowed to enter the narrow cave but the paintings be damaged.

deer, a big-horned stag of the tundra, a big black bull reaching out his muzzle toward a bit of grass (Plate III).

Near the inner end of the gallery is a couple of horses, one of which falls over backwards off a cliff or into a trap.

The unknown artist knew his mode of first hand and portrayed them so well that there is no mistaking his subject. In the foreground, a herd of horses is shown with lifted heads and outstretched necks. Although only the heads are pictured, there can be little doubt that the animals are foraging a stream or swimming a lake.

Near the front of this masterly scene, a red horse and a black bison are pictured in vital

poses with seven arrows. Two great jet black bison gallop away in opposite directions. Who can doubt that some prehistoric hunter Remington was reproducing a scene familiar to his eyes but still a mystery to ours?

These 400 animal portraits, some half hidden by later figures, are so superimposed and tangled that they form a highly complicated puzzle. Whether the original artist corrected some body lines or a subsequent critic coated his efforts, who can say?

Even photographs cannot do full credit to the lifelike postures and proportions of the scenes.

While we could move at ease and be careful not to stumble as we progressed from



Prehistoric Stage Are Pictured with Thick Hares, Thin Legs

Shore 1 - with some small fish, but no large ones, quite and down. But in some of the
the bottom of the lake, the fish are lost in the black mud, and are not

and people to protect the life span of the
human and our present and future world
and living in a peaceful and secure
and setting up his family. I need to know the
state and society that

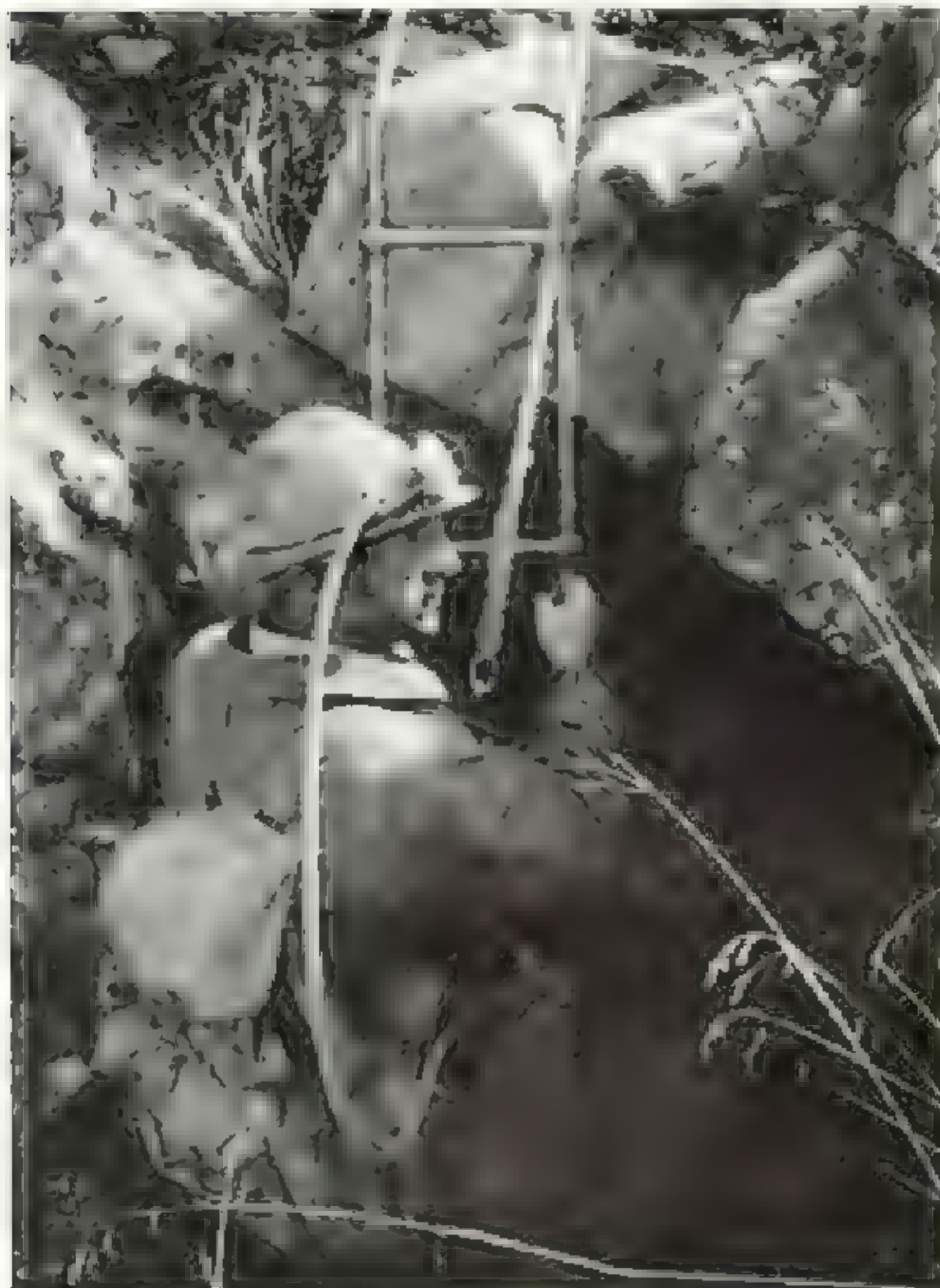
At present, a regular inspection is a major factor in preserving this very important art. In doing our visit the guide was more careful than I have been in the past of making no notes. It took two hours of working on polishing to wear the shoes enough so that they would not run over completely.

New standards for rivers and boating safety at a craft show were unveiled and sold up at the towers for photographic work.

through "steering" and "scheduling" expenses
which may seem excellent for preserving a
good image but which however we must not see
as a real risk in the long run, especially in a market

Most people are probably familiar with the word "allergic," but "allergophobia" has not been suggested by the fact that the eyes in the dark become "allergic" to the dark, and thus to the darkness with which they are confronted. (The word "allergy" is derived from the Greek word "allos," meaning "other.")

Mrs. J. M. Jones, who had been married for some time, was found dead in her bed last night. She was about 60 years old and had been ill for some days. The cause of death was asphyxiation by carbon monoxide gas from a faulty furnace.



Gasteret Enters One of His Thousand Caves

work. He was taking from a large leather bag, and putting in the bag a small piece of wood with a glass splinter in it, ready to use as a flashlight.

When we were going down the hill, which looked and sounded like the forest of a "honey cave," the whole conversation of the men and the women was about the honey. The women were very interested in the honey, and the men were very interested in the honey. The women were very interested in the honey, and the men were very interested in the honey.

Some of the men were very interested in the honey, and the women were very interested in the honey. The men were very interested in the honey, and the women were very interested in the honey. The men were very interested in the honey, and the women were very interested in the honey.

casters had also found them very interesting. In the honey cave, the men had found a very remarkable hunting ground, and the women had found a very remarkable hunting ground.

When the speaker was finished, the men and women were very interested in the honey. The men were very interested in the honey, and the women were very interested in the honey. The men were very interested in the honey, and the women were very interested in the honey.

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Sinai Sheds New Light on the Bible

By HENRY FIELD

*Physical Anthropologist, University of California African Expedition**

Photograph by William B. and Gladys Perry. For details see Photographers.

"SAND is your friend. Keep its wheels turning. Never mind which track you follow."

So said our desert guide, one-eyed, one-armed Selman, known to every Bedouin in Sinai. For all his physical infirmities—he was injured while dynamiting sharks in the Red Sea—he knew every inch of Sinai's rock and sand.

We were approaching St. Catherine's Monastery on Christmas night. The date was January 12, 1947, for its Greek Orthodox monks still followed the Julian calendar.

First we crept through deep sand, then over rough cobbleslones which paved hairpin bends on low but steep hills. Then, towering above us against the stars, we could see the ramparts watched over by the monks for 1,400 years.

Mount of the Ten Commandments

The two trucks stood nose to nose against the dark, shadowy wall. Their panting and gear-grinding over for the day, they seemed glad to have reached this religious haven at the foot of Mount Sinai. They could not have been parked very far from the spot where the children of Israel awaited the return of Moses with the tablets of stone bearing the Ten Commandments.†

A huge wooden gate swung open near by. A dozen figures streamed toward us. In the center, their heads silhouetted by the swinging lanterns, stood two monks. Suddenly we were confronted by a language difficulty, for none of us spoke Greek. Then out of the night came these reassuring words:

"That's O.K., right there. Welcome all to St. Catherine's. Merry Christmas!"

Father Nile, master of five languages, greeted us (page 809). We echoed his cheerful salutations.

Unloading the trucks began. Many willing hands, guided by Arabic words, assisted us. Our helpers were Jebelchreh (Men of the Mountains), hereditary servants of the monastery. We were led through the gate, across paved courtyards, and up stone staircases to a wooden balcony off which opened guest rooms.

The night was cold and clear, for St. Catherine's stands 5,000 feet above the level of the Red Sea. Father Nile, who was to be our guide and companion for the next five days,

served us a hot meal before retiring. (Incidentally, he is named for St. Niles, not for the River Nile.)

"Where the Sun Rises in the West"

About 200 airline miles from Cairo and Jerusalem, this isolated monastery is in the south-central part of the Sinai Peninsula, which forms the land bridge between Africa and Asia (page 797 and map, page 799).

As we stood on the cold balcony early the next morning Father Nile commented that this was one of the few places in the world "where the sun rises in the west." Indeed this did seem to be true. St. Catherine's nestles against the shady northern flank of 7,497-foot Gebel Musa, the traditional Mount Sinai, which blocks the early-morning rays. They are reflected onto the monastery from a rocky flank on the west.

During breakfast we explained to Father Nile that we were the Sinai phase of the University of California African Expedition.

Wendell Phillips, 26-year-old leader of this expedition, described how on lonely watches during his five years in the merchant marine he had dreamed of hunting for fossil man and apes in Africa. We were part of that dream come true. Scientific research was then in progress in Sinai, in the Faiyum of Egypt, in South Africa near Johannesburg, and in the great Kalahari Desert.

The dream of a Cairo-Capetown expedition with a fleet of 22 automobiles, an airplane, and a motorboat was becoming a reality.

Every branch of natural history was represented in some phase of the work. There were searchers for primate remains and cultural traces of ancient man, recorders of measurements and observations on the modern peoples (fossil hunters, collectors of animals and plants, researchers in tropical medicine, and several photographers).

* Dr. Field was Curator of Physical Anthropology, Field Museum of Natural History, Chicago (now Chicago Natural History Museum), until he entered United States Government service in 1941 doing research on the Near East. He has led or participated in nine archaeological expeditions to Europe, Africa and southwestern Asia.

† See "East of Suez to the Mount of the Decalogue" by Maynard Owen Williams, NATIONAL GEOGRAPHIC MAGAZINE, December, 1937.



Little Did the Owner Think that Scientists Would Study It's Skull

Dr. Field (author) measures with his calipers one of 19 skulls from an old "beehive" tomb in Sinai's Wadi Salih. Wendell Pritchard, a great old leader of the University of California African Expedition, and the author's assistant, are in the foreground. Each skull has the anthropologist's name, date, and place near to it. It is from Bedouins—long and narrow (page 81).

Wendell, looking around the table at the Sinai group, described our various duties.

Prof. William F. Albright of Johns Hopkins University, a specialist in ancient languages and biblical archaeology, was on the trail of early historical records linking Palestine and Trans-Jordan with the Nile Valley. He was studying ancient Egyptian cultures and was recording a new find in the proto-Sinaitic inscriptions of Sinai, el Khadim, the oldest writing in our area. His wide experience and profound knowledge were throwing new light on certain Biblical problems.

My jobs were to measure and describe in detail every Bedouin willing to submit to calipers, compile all available tribal ethnology, search for surface Stone Age sites, and even to might wander in Sinai.

With us were William B. Terry, field executive and photographer; his wife, Gladys, business manager, photographer, and pilot; and

Walter Thompson, technical assistant and handy man.

Down below, guarding the trucks, were Selman, Sidi Umbarak, a Jebeli guide; and our three Guffis, Ismail, Mahmud el-Far, and Maghrabi (pages 80, and 813).

Skilled Guffis Proud of Reputation

Guffis are trained excavators from Giza near Luxor. They are direct descendants of men trained in excavation methods and technique by the distinguished Sir W. M. Flinders Petrie—"father of archaeology," and later by Dr. George Andrew Lorton, of the Boston Museum of Fine Arts, and others.

The Guffis are proud of their reputation and knowledge. Throughout Egypt, the Sinai, Palestine, Syria, and the Trans-Jordan, they are respected by all.

These men are practical aid—well, for they can cook, keep house for scientists in the



To the Dawa-dwong Expedition, the Monastery Offered Warm Welcomes in English.
One of the Dawa-dwong Expedition Members, Mr. Dawa-dwong, at the Monastery.
Lamas, about 1900, at the Monastery. The Dawa-dwong Expedition, 1900.



Map by T. C. Van Pelt and Dr. C. L. ...

Here Scientists Sought Ancient Secrets of Sinai Land Bridge Between Africa and Asia

The Sinai Peninsula, a narrow strip of land between the Red Sea and the Mediterranean Sea, has long been a subject of interest to scientists. The map shows the "Possible land bridge of the land between the land of the East" and the "Route of the land bridge" and "Route of the expedition". The inset enlarges the area around the land bridge.



On the South Shore of the Gulf of Suez the Expedition discovered the Site of an Ancient Egyptian Fishing-Station, Port

It is situated on a low, sandy bank, and is a small, shallow, and somewhat irregularly shaped body of water, which is surrounded by a low, sandy bank. The water is very shallow, and the bottom is composed of sand and coral rubble. The surrounding area is a flat, sandy plain, and the water is a light, milky color. The site is a small, rectangular area, and it is surrounded by a low, sandy bank. The water is very shallow, and the bottom is composed of sand and coral rubble. The surrounding area is a flat, sandy plain, and the water is a light, milky color.



Trucks at the University of California Experiment Station, with view of the most productive places in the

1. The University of California Experiment Station, with view of the most productive places in the
2. The University of California Experiment Station, with view of the most productive places in the

northern France where specimens of this technique were first found.

Even the Governor of Sinai, whom we encountered later, showed real surprise at our dating of these finds. He had no idea that men of the Old Stone Age had crossed northern Sinai, leaving evidence behind them.

To our friends at the monastery we described our journey from El 'Arish to Bir Hasana and on to Nekhl, the ancient capital, which now is a partially abandoned oasis standing astride the crossroads of Sinai.

Near this trans-desert track we had found occasional traces left by the Stone Age hunters in the Wilderness of Tih, probably the Wilderness of Zin where "the children of Israel murmured against Moses and Aaron in the wilderness . . ." (Exodus 16:2).

We were moved by the loneliness of this wilderness—scarcely any living plant or animal in all this vast expanse of sand (page 801). We could understand why the discouraged children of Israel cried out: "Wherefore is this that thou hast brought us up out of Egypt, to kill us and our children and our cattle with thirst?" (Exodus 17:3.)

Hour after hour we had driven across this deserted region, when suddenly the horror of its utter lifelessness was broken. A small gray-brown bird with bluish underwings flew from a barren rock and alighted on another boulder the better to watch our thunderous coming.

After driving for many, many hours across this lonely wilderness, we finally came out into civilization. In the distance were palm trees and buildings and the curious illusion caused by the superstructure of a large ship seemingly gliding through the sea of golden sand. This was the Suez Canal.

Ancient Egyptian Turquoise Port Found

Professor Albright also related to the monks how we had found the site of an ancient Egyptian settlement for which archeologists had been searching half a century.

It has long been known that Egyptian expeditions used to cross the Gulf of Suez, northwestern arm of the Red Sea, to mine in Sinai the turquoise with which the Pharaohs and their ladies were adorned. Archeologists reasoned that there must have been an ancient port on the Sinai side near the Serabit el Khadim turquoise mines, which lie 17 miles inland. All efforts to find the site had been in vain, however, until our expedition discovered it through a rare stroke of luck.

While we were encamped at Abu Zenima, on the Sinai shore of the Gulf of Suez, we told Salman to inquire of everyone, including a group of Bedouins, whether they knew of any

sites where quantities of broken pottery lay upon the surface. To our surprise he returned shortly with word that an old bearded Bedouin knew of just such a place only about five miles farther along the seacoast, to the southeast.

Highly skeptical and certain that the pottery would turn out to be Turkish and relatively recent instead of the ancient remains that we sought, we nevertheless decided to have a look. The site proved to be a low mound on the edge of the Merkhah Plain, about a hundred yards from the Gulf (p. 800).

Pottery uncovered by wind erosion lay scattered over the ground, and to see the mound in cross section we did not even have to dig; the Sinai Mining Company had cut a trench through it for the tracks of a light railway connecting its Umm Biqua manganese mine with the sea.

"Heavens!" exclaimed Professor Albright after careful examination of the mound and the fragments of crude dark pottery. "This is the site that Petrie and the others have been looking for all these years!"

The pottery, he found, was unmistakably ancient Egyptian, of about 1500 B.C. Furthermore, this was the logical site for the ancient settlement, because it lay on a protected cove at the nearest possible point to the turquoise mines.

Theory Substitutes Reed Sea for Red

However, the real significance of this discovery lies in another direction. A trial trench in the part of the mound nearest to the sea showed that since 1500 B.C. its waters had not reached even to the base of the mound, which is six feet above the present Red Sea level. Thus the Red Sea has not risen appreciably during the past 3,450 years. This confirmed evidence obtained by Dr. Nelson Glueck in excavating Solomon's seaport at Ezion-geber near 'Aqaba in 1937-40.*

These findings shed important light on the story of the Exodus, which took place considerably after 1500 B.C. The route by which Moses led his people out of Egypt is north of the present Red Sea (map, page 799). Scholars previously had explained Moses' crossing of the Red Sea by assuming that its level at the time of the Exodus was some 25 feet higher than at present and that it thus extended northward all the way to the Bitter Lakes.

The work of Dr. Glueck and our discoveries at Merkhah Port, combined with our visits to Ramses, Succoth, and Pi-hahm—all mentioned in the book of Exodus—lead to the

* See "On the Trail of King Solomon's Mines," by Nelson Glueck, *National Geographic Magazine*, February, 1944.



Before the Gleaming, Gleaming After a Ministry Priest Upholds the Cross

Many of the individuals who formed the Association for the Preservation of the American Indian are now in the process of being "relocated" to the new Indian reservations. Many of the individuals who formed the Association are now in the process of being "relocated" to the new Indian reservations. Many of the individuals who formed the Association are now in the process of being "relocated" to the new Indian reservations.

• **„Gefährliche“** – hat sich in 10 Jahren nicht geändert

Moors and their settlements were being pursued by the Poles with the intention of their annihilation. However, Moors were not killed for their race but for their religion. As a result, many Moors fled to the East, some to Poland, some to the Soviet Union, and some to the United States. The Moors who remained in Poland were persecuted and many were killed. The Moors who fled to the Soviet Union were also persecuted and many were killed. The Moors who fled to the United States were also persecuted and many were killed.

Another line of evidence on the effects of the
 1997-1998 El Niño on the Amazon rain forest
 comes from a study by the University of
 Michigan, which found that the 1997-1998
 El Niño event caused a significant increase in
 the number of fires in the Amazon rain forest.
 The study found that the number of fires in
 the Amazon rain forest increased by 50% in
 1998 compared to 1997. This increase in
 fires was attributed to the 1997-1998 El Niño
 event, which caused a significant increase in
 the number of fires in the Amazon rain forest.

Previously Professor Vignati was on the staff of the University of Turin, where he was a member of the Faculty of Science. He is a member of the Italian Academy of Sciences and of the Italian Academy of Letters. He is also a member of the Italian Academy of Sciences and of the Italian Academy of Letters. He is also a member of the Italian Academy of Sciences and of the Italian Academy of Letters.

...night mail, their first in two months; news-

major, an expert on the Army's clothing and uniform needs, says that the Army's clothing and uniform needs are not as simple as they once were. "The Army's clothing and uniform needs are not as simple as they once were," he says. "The Army's clothing and uniform needs are not as simple as they once were."

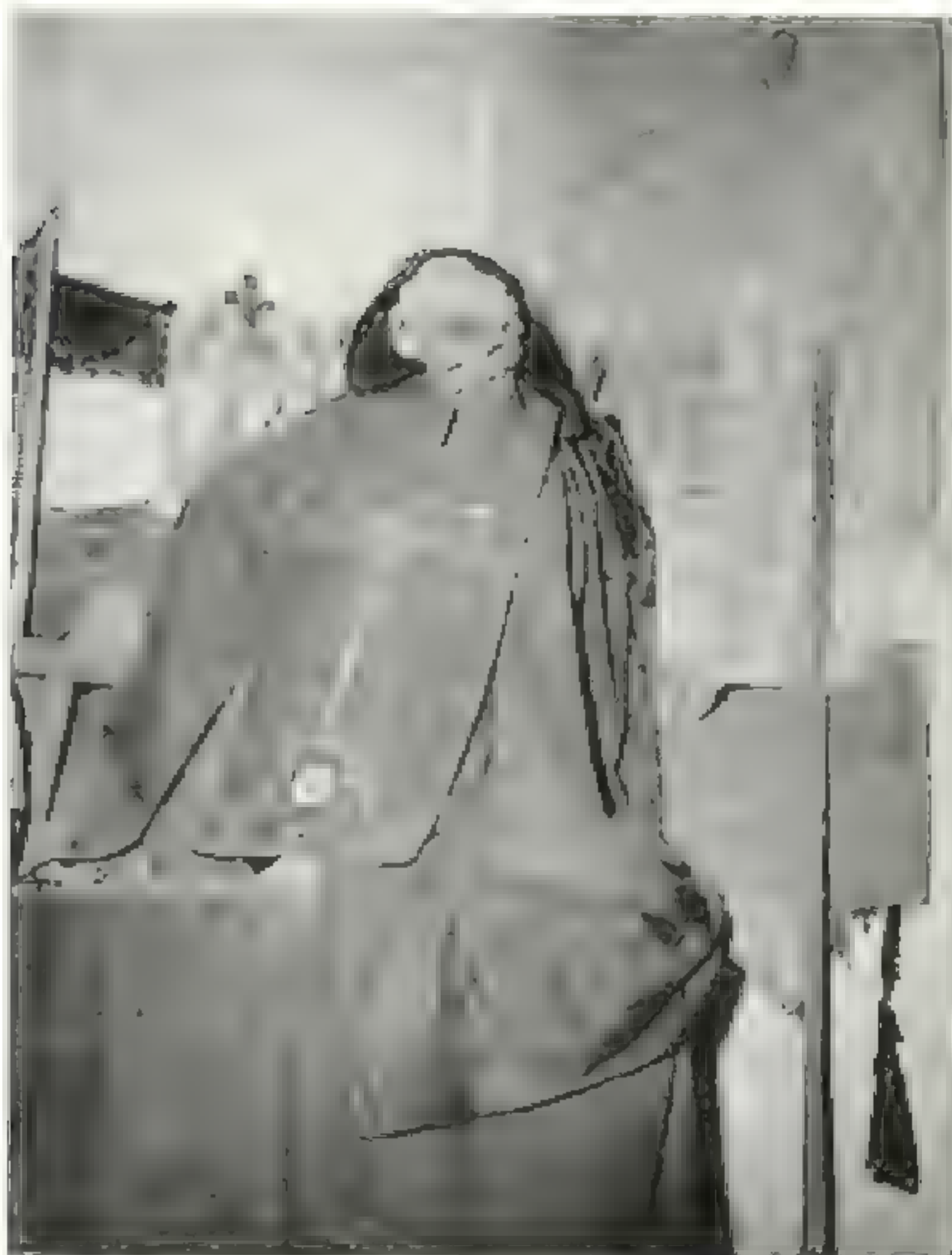
Week Page Air Force Hours

Enter New Year's resolutions. The average person will keep less than half of the resolutions made in January, according to the annual poll of the National Health Interview Survey.

[illegible]

Edward Schenck, a resident of the village of Superior and his wife were among the persons who entertained a number of persons at a large gambling establishment known as the Casino, 214 and 216, on the corner of Third and Superior streets, in the city of Superior, during the month of August, 1904.

The Superior welcomed us heartily. When



"St." Stephenos, Dead 1,308 Years, Still Serves as Watchman

He is in fact, about 850, the monk who has guarded the way up Mt. Sinai since the time of the prophet Isaiah. The statue is made of stone and is about 10 feet high. It is seated in a niche of the church vestments and stands at the threshold of the entrance to the monastery. There the lone sentinel keeps watch.

us hospitality for as long as we might wish to stay, and extended the rare privilege of working in the monastery's world-famous library. From our host we learned the early history of the monastery. In an account similar to that which A. Mary K. Dabson, Paul Gotch, and others have given.

According to tradition, Queen Helena, mother of the Emperor Constantine, visited Sinai in 342, and a church was built on the site of the Burning Bush from which the angel of the Lord spoke to Moses.

And the angel of the Lord appeared unto him in a flame of fire out of the midst of a bush; and he looked, and, behold, the bush burned with fire, and the bush was not con-

sumed. . . . And (the Lord) said, Draw not nigh hither; put off thy shoes from off thy feet, for the place whereon thou standest is holy ground. (Exodus 3:2, 3-6).

Story of St. Catherine

The name of St. Catherine appears to have been adopted during the eighth or ninth century. The legend is that this Christian girl defied the Emperor Maximianus II, converted the Empire who visited her in prison, and was finally about to be broken on the wheel when it was miraculously broken itself.

She was beheaded at Alexandria, but in answer to her prayer angels transported her body to Mount Sinai. In olden Christian times, and in several centuries later. Afterwards, the monks brought it to the monastery, where it has been venerated ever since.

Upon occasion two small silver boxes are opened, one revealing her skull and the other a fragment of her body.

Walking around the battlements of the monastery, we passed 16th-century cannon, relics of former battles for the privilege of sanctity and escape from the troubles of the world.

A view of the monastery from the top of the mountain is very beautiful. Below us a wooden structure housed the windless which raised the early travelers in and out of the monastery. This is now used to lower supplies and the daily ration of bread to the Jebeliveh, three hard loaves for each man, two for his wife, and one for each child. Every loaf has to be soaked in water before it can be eaten.

We walked down some stone steps, through narrow passages, some underground, past

whitewashed walls to be Basilica built in 505 and dedicated to the safety of our pious Emperor Justinian (A.D. 483-525).

Through a huge carved door we passed into the rich Byzantine interior of the Church of the Transfiguration later renamed for St. Catherine, with its 12 gilded columns and elaborate carvatura. On the door lintel was engraved in Greek: "On this spot the Lord said unto Moses: 'I am the God of your fathers, the God of Isaac, and the God of Jacob. I am He who . . .'"

This is the 2nd of the Lord's words to Moses through it.

Our guide then escorted us to the Church of St. John. Here we took off our shoes, for the place we were to enter was holy ground. Through a narrow doorway we moved in single file to stand silently before the site of the Burning Bush. Here we were following in Moses' footsteps.

Outside we passed an ancient tree growing from the wall at the back of the church. One of the monks gave each of us some leaves from this sacred tree, which, according to tradition, sprang from Aaron's rod. I pressed them reverently to my forehead. My prayer Bible: "And Moses went into the tabernacle . . . and, behold, the rod of Aaron for the house of Levi was budded . . . And the Lord said unto Moses: 'Bring Aaron's rod and put it in the ground; and it shall bud and bear fruit against the rebels . . .'" (Numbers 17: 8, 10).

At this Christian monastery we were allowed to pass. The mosque was built by order of Abu Ad-Masur Anadlakhi Al-Amri from A.D. 1101. On account the Bedouins of Sinai and later the Muslims.



Ancient Egyptians Cleft This Rock of Ages for Turquoise

Today, to obtain the bluish-green gems from the Wadi Maghar, the Bedouins blast with dynamite. With long, pointed Moslem swords, Gaid excavator Dr. Felt searches for turquoise in the dark rock crevices. He has found some turquoise in the Wadi Maghar.

Our workshop, Jacques of Verona, a monk, about the year 1335, observed how Serapion prepared the oil and the oil was prepared in a minaret, since at that time St. Catherine's Monastery was under the Sultan's domination.

How a Priestless Rock Reaches Moslems

We returned to the monastery, to the hall of the monks. In a high vaulted room, 20 ft. x 50 feet long, stood two wooden tables with a small fortress before each seat.

Upstairs we climbed by a narrow passage and stairs to the library. This was the original home of the *Codex Sinaiticus*, a Greek manuscript of the Bible and one of the

most famous books in the world. It was sold to the British Museum in 1933 by the Soviet Government for nearly \$500,000.

How this Codex reached Moscow is an interesting story, told in two versions. L. F. K. von Tischendorf, a German Biblical scholar, visited St. Catherine's in 1844 and was granted permission by the monks to look through their library. According to his version, Tischendorf found a section of the New Testament about to be burned as rubbish. At his request it was given to him.

Nine years later he returned to try to recover the rest of the manuscript, but without success. On a third visit, in 1859, a monk who had kept it in his cell gave it to him, wrapped in a red cloth. Tischendorf presented it to the Tsar, who sent a beautifully bound photographic copy as a present to the monastery. Seventy-four years later the Soviets, requiring foreign currency, sold the original to the British Museum.

In the opinion of various scholars, Tischendorf acted correctly throughout the entire transaction. He later obtained decorations and a gift of 9,000 rubles for the monastery. Moreover, he stayed on good terms with it during his lifetime.

The version which we were told by the librarian of St. Catherine's was that Tischendorf begged permission to take the *Codex Sinaiticus* to Cairo in order to copy it and that he never brought it back.

Its loss, no matter how it happened, is still a sore subject at St. Catherine's.

The librarian also told us of an Arabic psalter in which a monk had written the story of the two sons of a rich merchant. One gave away his inheritance and became a hermit; the other kept his wealth to help the needy. Which was the greater saint? The recorder ended further argument with the words: "In Paradise I saw both."

The librarian generously showed us a few treasures. The *Codex Syriac* of the Gospels, dating from the fourth or fifth century after Christ, and several illuminated manuscripts including Cosmas Indicopleustes' *Christian Topography*, which dates from about the 12th century. There are texts in Greek, Arabic, Syriac, Slavonic, Persian, Georgian, and Coptic. There is indeed a world's treasure house.

Icon Painter Unaware of World Wars

As we walked along the balustrade toward the guest rooms, we saw below a monk painting icons. Father Nile showed us examples of his work and told us that the artist had been in the monastery continuously for the last 56 years. He is fond, very fond, of cats.

Each monk receives a daily food ration. The artist shares his meager meals with his many cats, some of which follow him around wherever he goes.

He neither knows nor cares about the outside world. A few years ago a visitor engaged him in Greek. The artist was mildly surprised to hear about World War II, but not half so surprised as the visitor, who discovered the monk had not even heard of World War I.

In direct contrast is Father Nile, who has been in the monastery only since July, 1947. During the last war he was a censor for the Egyptian Government. His knowledge of five languages made him exceptionally useful—as well as his ability to read printing upside down almost as easily as right side up.

Father Nile has a radio, so that he can keep the Superior informed of major world events. A jack-of-all-trades, he is electrician, carpenter, plumber, shoemaker, and general handy man, so that his nondevotional time is more than full.

Skeleton Guards Bones of Monks

Each morning at 4:15 we were awakened by one of the young novices beating with a wooden bar between two uprights the same haunting rhythm. At 4:25 he tolled the great bell for the call to prayer, which lasted until 9 o'clock. Chanting in Greek bathed the air.

Special services are held in the afternoon. Phillips and I attended a memorial to the stoning of St. Stephen, in the little chapel dedicated to this martyr. At the conclusion we were each given a round, flat loaf of bread with a portion of the convent's meal on it. The monk serving placed it on our tray upon the moment we passed the service house on the burning bush. Here we sat against our wall in the company of all the monks. The younger members called long I-shams, which mean which to rest, for this is our time to rest from our labors. These blessed times causing God to create the place where Moses saw the burning bush and where I saw the monks at rest.

On a terrace we saw the charnel house where the skull and bones of every monk are stored.

Inside the entrance and apparently still on guard sits "St." Stephanos, the porter, dressed in his robes of office. No watchman has stayed at his post longer than he, for in life he guarded the way up Gebel Musa (Mount Sinai) and since his death about the year 580 his robed skeleton has guarded the entrance to the charnel house (page 804).

Within, the skulls of the monks are arranged in one rather gruesome heap, long bones like



Remains of Long-dead Monk's Pit Hui in the "Bare Room" of the Monastery

During my visit, when I was shown the remains of a monk, I was struck by the way the monks of the monastery treated the dead. The body of the monk was placed in a wooden coffin, and the coffin was placed in a stone pit. The pit was filled with earth, and the monk was buried. In the pit, the monk was buried with his hands and feet bound together. The monk was buried in the pit, and the pit was filled with earth. In the pit, the monk was buried with his hands and feet bound together.

and so on in another. The skeletons of the Superiors are preserved separately in wooden trays. Bones of the few visitors who died there are kept apart.

Chain Link Brothers Even in Death

In one double box, still I saw the remains of two brothers. I found them, I was told, buried together in a stone coffin in 1871. They had been in the monastery for many years, but another story relates that they were two brothers from Provence, France, who had yielded to passion and murdered their brother. As penance they were forced to visit these sacred places—Rome, Jerusalem, and Sinai.

They were also obliged to chain themselves so that both could not sleep at the same time. In Sinai they spent the rest of their days as monks, living in a barren mountain.

During the early centuries of Christianity

many monks spent years in the wilderness, practicing asceticism. Many were victims of serious diseases.

At the monastery, we were served by monks. They were said to be the "disciples" of the Virgin Mary. The monks were said to be the "disciples" of the Virgin Mary. The monks were said to be the "disciples" of the Virgin Mary.

The monks were sometimes referred to as "Sibyan" or "Boys of the Monastery," a name which I find. It met with great approval, for knowledge of it implied that I was personally acquainted with their history.

There was an interesting anthropological problem. The Jebeliye had acquired many of the features of the modern man, but were of a different type. There had been little physical change since the true Bedouin, with the subservient Jebeliye.

Would a physical examination and observations of the Jebeliye be of any use?



Rocky Desert on Snow, When Stand to Christia City of Ugaru

With the desert on snow, the city of Ugaru stands in a vast, open landscape. The rocky terrain is covered in a layer of white snow, creating a stark contrast with the dark, jagged rock formations. The city, nestled in the valley, appears as a small cluster of buildings amidst the vast, desolate landscape. The sky is a pale, uniform grey, adding to the somber and isolated atmosphere of the scene.



Honorable Guests to the Expedition Were Greek Catholic Monks of St. Catherine's Monastery, at the Base of Mount Sinai

Photograph taken at the request of the expedition by Mr. J. H. M. Smith, of the U. S. Geological Survey, at the base of Mount Sinai, Egypt, 1905.

photographs show differences from the Bedouins of Sinai? Here was a chance to find out.

Setting up a table in the lower courtyard outside the main gate, I studied about 70 Jebeliyei for comparison with 125 Bedouins I had examined. The former seem to be taller, lighter skinned, more straight nosed, smaller boned, and more oval-faced. Final statistical comparisons have not yet been completed at Harvard.

The children were photographed and also encouraged to collect all manner of small animals. The quickest method of collecting is to pay a small coin for each specimen, whether it be lizard, scorpion, or beetle. Fifty children can gather a representative collection in a few hours, and they love it. Amid wild screams and much giggling they rush up with offerings until bedtime reigns and a halt is called.

The Ascent of Mount Sinai

On our last afternoon we climbed the 3,500 steps to the top of Mount Sinai. Our first breather came at a little chapel built, according to Sir Frederick Henniker, who climbed this way more than a hundred years ago, to commemorate a miracle. He wrote:

"The monks were once driven from the convent by fleas and famine—they were proceeding up the mountain to pray, when they were met on this very spot by a supernatural figure—say St. Catherine; this good angel informed them that they would find their burdens replenished, and that fleas should never exist there again."

Ugh! Up we passed through a gate at which it was customary for the pilgrim to confess his sins. Our first real halt was made in the shade of a large cypress standing beside a spring (page 798). Next by is a chapel on the alleged spot where the ravens fed Elijah. "And it shall be, that thou shalt drink of the brook: and I have commanded the ravens to feed thee there" (1 Kings 17: 4).

After nearly two hours of tedious but not difficult climbing—thanks to steps cut by one of the monks, we arrived panting at the top of Mount Sinai. A sip of water and a stick of gum were the physical rewards doled out by Gladys and Bill Terry.

Atop a huge rock we feasted our eyes in every direction over this great mountain complex, of which we seemed to be sitting on the gigantic fulcrum. To the east beyond the mountains lay the placid gray waters of the Gulf of 'Aqaba. To the southeast was the point known as Ras Muhammad. To the northeast appeared vaguely the escarpment above 'Aqaba.

In the golden rays of the setting sun, which

picked out the blues and reds of the strata below, we sat amid mountain peaks in a sea of abomination and desolation. We recalled that Moses spent forty days and nights here alone on Mount Sinai when the Lord gave him the "tables of stone, and a law, and commandments which I have written; that thou mayest teach them" (Exodus 24: 12).

We were moved, deeply moved, by the loneliness, the beauty, and our thoughts. Without speaking we made the descent to reach St. Catherine's just before the quickly riding veil of darkness overshadowed the valley.

Trucks Again Hit Desert Trails

The next morning we bade our hosts farewell and turned our backs on this haven of refuge from the atom-bomb-fearing outer world of struggle and strife.

A last look backward showed two white-bearded patriarchs silhouetted against the blue sky as they waved to us from the highest battlement. Peace and quiet would now prevail until the next visitors appeared across the sands.

We followed a 10-foot stone wall behind which towered superb poplars, vivid green against the dun-gray rocks. Some Bedouin children were tending their long-haired black goats. Beside the track stood a small stone arranged as a Moslem prayer place facing southeast. Here a devout Moslem had bowed his head toward Mecca.

Through a narrow mountain gorge twisted the desert track. From the brilliant sunshine into this shade we was like entering the nether world. We drove down the twisting Wadi el Sheikh, stopping at likely places to search for Stone Age tools or broken pottery, but to no avail. Around one sharp bend we saw Gabel Sethel directly ahead, impressive as ever, his proud iron-gray head pointing skyward.

Measuring Skulls from a "Beehive" Tomb

Late in the afternoon we passed the juncture of the Wadi el Sheikh and the Wadi Soluf, a turn we had missed on our way to the monastery. However, a wrong turning sometimes has advantages, and this was no exception.

In the Wadi Soluf we visited two circular "beehive" tombs (*umqums*) standing on the bank. The capstone of one was removed and the skulls were measured and photographed. Each skull was replaced and the capstone resealed. These data will throw light on the physical characteristics of the early inhabitants of this region (page 796).

Toward evening we were approaching Feiran Oasis, the halfway point to Abu Zema

rest house, which was our base camp in southwestern Sinai. However, we met Sheikh Salehman bin Gharun of the Sawaha tribe. He invited us to encamp near him in the Wadi Savah (see iv).

Swinging himself onto the Dodge Duster truck, he guided us up a rock-strewn, twisting, narrow stream bed toward a corner where pleasant and welcoming smoke arose behind four black goat-skin tents. They were pitched on the lee side of the Wadi Savah, as usual in the best possible location.

We camped some 300 paces to the north, as not to be bothered by the vicious barking dogs and, incidentally, to avoid the normal swarm of fleas which thrive in Bedouin camps (see below for my itching memory).

Sheikh Salehman walked over to greet us as formally as possible. He had ordered a young ram to be killed in our honor. The most succulent morsels were for us, the remainder for Selman, Muhammed, our radio operator, and the Gaffis. At our request the Sheikh unstrapped his golden-handled sword, *ghaib*, which he held in his right hand. This he was proud indeed.

Within a few minutes the young ram, which had scampered away at our approach, had been killed and our meal was being roasted on a spit improvised by Bill Terry from a jack handle. We chewed long on the meat chunks, which tasted like tough and salty *shuk khabab* (liver of skewered lamb).

After dinner Weso of Phillips, Wal Thompson, and I were escorted by Selman, his one eye glistening with pride by the lantern's light, across to Sheikh Salehman's tent, where we



Puzzle—How to Measure the Head Without Removing the Headcloth

A self-conscious about his baldness, the bearded Sawaha Bedouin declined to remove his headcloth. We tried to measure his head by using a tape measure, but he refused. He was as those of some of their kindred, who are so particular about individual measurements and observations as to make a mistake of a few inches. Results being tabulated at Harvard in 1934, the man in the photograph is a descendant of the early Arab conquerors of the region.

After dinner we were escorted to the tent of the Sheikh. We sipped the bitter black coffee as noisily as possible to show our good Bedouin manners.

"Dixie" Contrasts with Desert Dirges

All a Mizrahi tribesman who lived a few rods away up a well-watered stream bed, brought out his *rahifa*, a single-stringed ancestor of the violin. With his horseshoe bow he accompanied himself as he sang mournful songs telling of the warriors of his tribe and then one of a lovely, fifteen-year-old maiden who could dance crotch.

Sinai Script	Sinai Script Represents	Hebrew	Greek	English
	Oxhead		A	A
	House		B	B
	Fish		Δ	D
	Man Praying		E	E
	Fence		H	H
	Palm of Hand		K	K
	Oxgoad		L	L
	Water		M	M
	Serpent		N	N
	Eye		O	O
	Throw Stick		P	P
	Human Head		R	R
	Bow		S	S
	Mark of Cross		T	T

From Crude Pictures Our Alphabet Evolved

This table is based on studies by Prof. W. F. St. Louis, of Johns Hopkins University. Archaeologist and Advisor, University of California African Expedition. He has made a new decipherment of such Sinaitic writing of 20 in our alphabet (page 815).

As Ali's voice kept perfect harmony with the song brought delightful memories or anticipations to the shining deep-brown eyes of the group assembled around the glowing camel-dung fire.

Then quietly Walt produced his little harmonica. The soft strains of "Nixie" filled the tent and spilled over into the night outside. Our hosts' brows furrowed deep, for this rhythm was strange to them.

Wendell's fingers were itching. Upon an upturned coffee bowl he began to drum in time to the strains of the harmonica. Gradually the Bedouins grasped the new rhythm and at the end they clapped, something I had never heard before in a Bedouin tent.

Then Ali played a piece on the rababa and Walt another on the harmonica. The concert reached its finale when Wendell drumming on two upturned basins, accompanied Ali, who first was puzzled, then enchanted.

"Sleeping" Water Pump Awakened

In the morning on the way to Irtan Oasis we stopped at a small mud hut while Bill Thompson and I, having taken our water pump, required two hours to revive this Ruth Goldberg contraption. I passed the time by turning a great deal of letters as we were camped near.

At length in the distance I heard the pump snort and sputter convulsively as if in great pain, and soon thereafter the water began to flow. The expression on all faces denoted surprise. For 40 days the pump had "slept," to use the Bedouin phrase. Now water would flow once again to the narrow mountain stream, and this small patch of fenced-in desert would blossom as the rose.

We lunched beneath a vine-covered pergola outside the former residence of the representative of St. Catherine's, now occupied by a Bedouin family. On the opposite side of the ruins of a mill; from the ancient tradition holds that Moses watched Joshua defeat the Amalekites while Aaron and Hur stayed up his hands until the going down of the sun (Exodus 17: 12).

Immediately behind our cool and restful spot, surrounded by rich vegetation and sheltered by palm trees, rose the ruins of ancient Pharon, mentioned as early as the second century after Christ. Later we walked over the low hills, where antique pottery fragments formed a veritable carpet. The capital of a marble column lay half exposed in the dust and sand of centuries. Parts of walls and buildings covered more acres (page 808).

On the hillside above we examined seven



"Here's a list of flowers I found on a walk near One of the Buses"

Figure 5 is the graph of the function $f(x)$ for x in the interval $[0, 1]$. The function is a continuous curve that starts at the point $(0, 0)$ and ends at the point $(1, 1)$. The curve is concave down, meaning it is always below the straight line segment connecting $(0, 0)$ and $(1, 1)$. The area under the curve $f(x)$ is shaded in gray.

and can be cut into the living rock. In one
cent were the rough walls being smoothed
and a new window and door were being
cut into the living rock. The old window was
cut out by removing the old stones. The
new window was cut out by removing the
old stones. The new window was cut out
by removing the old stones. The new window
was cut out by removing the old stones.

Back in the morning, we all went to school and in 2 subjects. We all went to work and in a couple of hours had anthropometric data on another 15 children of same age. We bought some coins found in the ruins of Phrygia which proved to belong to the 1400-1300 B.C.

As the former may be secured to you through a properly managed new Democratic campaign program. We will be in a position to make slight subings. And when National Convention the Democrats will be in a position to make slight subings. And when National Convention the Democrats will be in a position to make slight subings.

[illegible]

ing, Kahel, out snake catcher with a good
one found a small brown one, which he has
sent to a snake doctor at the University of
Tübingen. The snake was that in 1958 gold went to
him, and the entire collection was as the
same day.

Reducing the Risk for Hookah Tobacco Use

As we drove up, our boat (which was a Bedouin mounted on white riding animal) they took away from us because they wanted water or cigarettes. But as we passed the boatmen came back, tied their animals and walked a few miles and then turned back.

Wintergreen scented with a pleasant
odor, the fruit green and grows on the
upper part of the white branch. The
young leaves are white and the old ones
are green and the fruit is green and
white.

Journal of Management Inquiry 18(6)p. 709-724

• **2002** In the **Sevens** tournament, **USA** won the **Gold** medal, **Canada** the **Silver** medal, **France** the **Bronze** medal, **Spain** the **Fourth** place, **Italy** the **Fifth** place, **Argentina** the **Sixth** place, **Japan** the **Seventh** place, **South Africa** the **Eighth** place, **South Korea** the **Ninth** place, **China** the **Tenth** place, **India** the **Eleventh** place, **Philippines** the **Twelfth** place, **Thailand** the **Thirteenth** place, **Malaysia** the **Fourteenth** place, **Singapore** the **Fifteenth** place, **Indonesia** the **Sixteenth** place, **Brunei** the **Seventeenth** place, **Myanmar** the **Eighteenth** place, **Laos** the **Nineteenth** place, **Vietnam** the **Twentieth** place, **Timor-Leste** the **Twenty-first** place, **East Timor** the **Twenty-second** place, **Maldives** the **Twenty-third** place, **Sri Lanka** the **Twenty-fourth** place, **Bhutan** the **Twenty-fifth** place, **Nepal** the **Twenty-sixth** place, **Bangladesh** the **Twenty-seventh** place, **Pakistan** the **Twenty-eighth** place, **Afghanistan** the **Twenty-ninth** place, **Uzbekistan** the **Thirtieth** place, **Kazakhstan** the **Thirty-first** place, **Kyrgyzstan** the **Thirty-second** place, **Tajikistan** the **Thirty-third** place, **Georgia** the **Thirty-fourth** place, **Armenia** the **Thirty-fifth** place, **Azerbaijan** the **Thirty-sixth** place, **Belarus** the **Thirty-seventh** place, **Belgium** the **Thirty-eighth** place, **Netherlands** the **Thirty-ninth** place, **Germany** the **Fortieth** place, **France** the **Forty-first** place, **Italy** the **Forty-second** place, **Spain** the **Forty-third** place, **Portugal** the **Forty-fourth** place, **Greece** the **Forty-fifth** place, **Turkey** the **Forty-sixth** place, **Cyprus** the **Forty-seventh** place, **Israel** the **Forty-eighth** place, **Jordan** the **Forty-ninth** place, **Lebanon** the **Fiftieth** place, **Syria** the **Fifty-first** place, **Yemen** the **Fifty-second** place, **Oman** the **Fifty-third** place, **UAE** the **Fifty-fourth** place, **Saudi Arabia** the **Fifty-fifth** place, **Qatar** the **Fifty-sixth** place, **Bahrain** the **Fifty-seventh** place, **Kuwait** the **Fifty-eighth** place, **Oman** the **Fifty-ninth** place, **UAE** the **Sixtieth** place, **Saudi Arabia** the **Sixty-first** place, **Qatar** the **Sixty-second** place, **Bahrain** the **Sixty-third** place, **Kuwait** the **Sixty-fourth** place, **Oman** the **Sixty-fifth** place, **UAE** the **Sixty-sixth** place, **Saudi Arabia** the **Sixty-seventh** place, **Qatar** the **Sixty-eighth** place, **Bahrain** the **Sixty-ninth** place, **Kuwait** the **Seventieth** place, **Oman** the **Seventy-first** place, **UAE** the **Seventy-second** place, **Saudi Arabia** the **Seventy-third** place, **Qatar** the **Seventy-fourth** place, **Bahrain** the **Seventy-fifth** place, **Kuwait** the **Seventy-sixth** place, **Oman** the **Seventy-seventh** place, **UAE** the **Seventy-eighth** place, **Saudi Arabia** the **Seventy-ninth** place, **Qatar** the **Eightieth** place, **Bahrain** the **Eighty-first** place, **Kuwait** the **Eighty-second** place, **Oman** the **Eighty-third** place, **UAE** the **Eighty-fourth** place, **Saudi Arabia** the **Eighty-fifth** place, **Qatar** the **Eighty-sixth** place, **Bahrain** the **Eighty-seventh** place, **Kuwait** the **Eighty-eighth** place, **Oman** the **Eighty-ninth** place, **UAE** the **Ninetieth** place, **Saudi Arabia** the **Ninety-first** place, **Qatar** the **Ninety-second** place, **Bahrain** the **Ninety-third** place, **Kuwait** the **Ninety-fourth** place, **Oman** the **Ninety-fifth** place, **UAE** the **Ninety-sixth** place, **Saudi Arabia** the **Ninety-seventh** place, **Qatar** the **Ninety-eighth** place, **Bahrain** the **Ninety-ninth** place, **Kuwait** the **One hundredth** place.

He was in the best of spirits because the local police had captured a hashish (marijuana) smuggler in the neighboring mountains.

The evidence was produced—122 packages of hashish, each wrapped in a cloth bag and stamped with the manufacturer's trade-mark. The cash value was about \$50,000—a good haul indeed!

During our last days in Sinai we made a difficult drive to the foot of Serabit el Khadim to visit the Egyptians' ancient turquoise mines and examine the inscriptions in the walls.

For this final phase of the archeological and anthropological reconnaissance of Sinai we had been joined by Drs. John C. Trever, Willard A. Beling, and William H. Howland from the American School of Oriental Research in Jerusalem.

We were, therefore, quite a gang as we started our ascent of Serabit el Khadim. We were strung out along the face of the cliff, often hanging by our eyelashes with a steep 500-foot drop below our shuffling feet.

To liven up things, Werned and Bob would detach a huge boulder, whose bouncings echoed up and down the narrow valley. As if this were not enough, they would shout, "There goes a professor!" For those of us unrelated to mountain goats or bees, this did not make the dangerous passage any easier.

After nearly two hours of hard climbing we reached the summit. Here Egyptian miners of turquoise had built a large temple with elaborately carved stela, a sanctuary, and cubicles for sleepers. According to Sir Flinders Petrie, who excavated here in 1905, the oldest trace of occupation is the life-size carving in gray marbled limestone of the royal hawk of Siptah, founder of the Fourth Dynasty (2780-2560 B.C.), who favored hawk figures in his temple at Mahuta in the Nile Valley.

As we rested on a fallen stela, covered with hieroglyphs, it was pleasant to recall that here had come Petrie, Robert F. Blake, and Keeson Lake (the last two from Harvard), and many others, to recapture the ancient tale.

Earliest Writings in Our Alphabet

Albright spent some hours studying the famous proto-Sinaitic inscriptions carved in one of the near-by turquoise mines. These are the oldest group of writings in our alphabet, dating from the early 15th century B.C.

From these crude pictographs, in use 3,500 years ago, have developed the letters in which this article is written. (page 812)

The approximate age of these writings in stone is indicated by the ruined Temple of Hathor, "Mistress of Turquoise" which stands on a hilltop near by and bears an inscription

showing it was built during the time of Thutmosis III and Hatshepsut (1501-1480 B.C.). This evidence was now supported by our expedition's discovery of Merkhah Port, from which the turquoise was shipped, and the proof given by its pottery that the port existed about 1500 B.C.

Appeals to "Serpent Lady" and Foreman

With this confirmation for the dating, Albright was able to make a new decipherment of the inscriptions, which are memorials to dead miners written in Canaanite characters.

"O Serpent Lady, O Master (of Mines), give a burnt offering," says one as translated by Professor Albright.

"I am one who returned to be with the Serpent Lady, my mistress," reads another.

"A perpetual offering, O foreman of our mine! Give a burnt offering," goes a third.

Professor Albright points out that the idea behind these appeals to deities and overseers apparently was that without their aid the deceased would not receive mortuary offerings and his spirit would suffer the same miserable existence that he himself had endured in life.

The miners were not local Berberians but Semitic captives and slaves, brought to this hard labor from Egypt and using the language of the country of their origin, Canaan, the Holy Land. Incidentally, these 15th-century-B.C. memorials in the Canaanite Linear alphabet assist scholars by showing how the parent alphabet developed before the 13th century B.C., when Canaanite inscriptions turn up in Palestine.

In the meantime, the rest of the group searched the fallen blocks and the walls of rock shelters for new inscriptions, but with no success. Selman and I collected stone picks and tools used by the miners and washed down into a stream bed just below the temple.

On the second afternoon Terry found the upper portion of a stone shaft on the ridge leading from the turquoise mines. The three Galtis went to work with a will. By the next afternoon the shaft had been opened to a depth of 14 feet. Unfortunately this was the end. The purpose of the shaft remains a mystery.

Glancing around the magnificent panorama for the last time, we scrambled down a steep short cut to camp and drove back to Abu Zenima.

By now we were anxious to shave and bathe in hot water. Leaving the shore of the Gulf of Suez just as the moon rose, we drove to Suez and through Cairo to reach our base camp at Khat Aushim, on the edge of the Faiyum, just before dawn. The Egyptian Government had proved the best of hosts.



20 Hoover Dam: World's Highest Plug the Colorado and Backs Up a Huge Reservoir

Hoover Dam is the world's highest concrete dam, and the largest dam ever built. It is a massive structure that spans the Colorado River, creating a huge reservoir behind it. The dam is a marvel of engineering, and it has been a source of pride for the United States ever since it was built.

Mapping Our Changing Southwest

By FREDERICK SIMPICH

EARLY MAPS of our Southwest show the Green River rising in Utah and flowing west to Golden Gate. When Gen. William H. Ashley camped on Utah's Green River in 1825 men thought rafts could float from there down to St. Louis! And St. Louis itself was 60 years old before we knew the Great Salt Lake existed!

Men still living remember when the first railroad crossed our continent and when some now populous Southwest cities were mere villages.

Phoenix, Arizona, had only 3,152 inhabitants in 1890; now, with close to 100,000, it's one of our most crowded cities. Los Angeles, in 1880, had 11,183 people, and now its area population may be 4,000,000.

Yet our Southwest echoed to the tread of Spaniards in coats of mail decades before Pilgrims landed or Capt. John Smith built huts at Jamestown.

Hernando de Alarcón explored the Colorado Delta in 1540.

Julio Rodriguez de Cabrillo landed at San Diego, California, in 1542; two years earlier Francisco Vazquez de Coronado had crossed from Mexico into what is now Arizona, heading the fabled "golden cities" of Cibola.

No maps we know were left by Coronado, whose colleague, Garcia Lopez de Cardenas, found the Grand Canyon. But modern historians, mapping Coronado's march from the narratives, show he got as far east as Kansas.

Oldest and Newest USA Abodes

With this issue of the NATIONAL GEOGRAPHIC MAGAZINE is published a new map of the Southwest.

It shows scores of towns which didn't even exist until after transcontinental railroads reached southern California in the 1880's. In contrast, it shows others, some of Pueblo Indian origin, which are among America's oldest human abodes.

This map replaces an earlier one of the Southwest and takes its place among The Society's large-scale maps of regions of the United States. Previously issued in this series were Northeastern United States; Southeastern United States; South Central United States; and North Central United States.

The new map is 34 1/2 x 23 1/2 inches. It charts the Southwest on the Albers equal-area projection on the scale of 1:2,500,000, or 39.46 miles to the inch.

Like others in the series, this map serves as an authoritative, detailed reference to the area covered.

New Works of Man Shown

The up-to-the-minute map compilation included digests information given by recent official State road maps and includes the best routes into Mexico. Latest census figures and estimates governed the selection of towns shown. Railroads, canals, dams, and other colossal works of man, numerous here, are marked.

The Southwest region includes the Rockies of Colorado and New Mexico; the Sierras of California; the Grand Canyon of Arizona; and the Basin Region of Utah and Nevada, with its Great Salt Lake and Humboldt River. Its incomparable topography is shown in blue and brown shading.

Together with the other regional United States maps, this sheet makes an important contribution toward the never-ending endeavor to map the ever-changing, rapidly growing United States.

This new chart includes Arizona, New Mexico, Colorado, Utah, Nevada, and California.

These six States have a total of 21,000 miles of railways and some 315,000 miles of highways.

More than 13,226,000 people, or about nine percent of our total population, now live in this area. Nevada, least settled of all our States, with fewer than two human beings per square mile, has 139,000 of these, and California has about 10,000,000.

More startling than amazing population growth are the changes men steadily make in the aspect of this arid empire.

Warnings to "Take Plenty of Water with You" are posted along highways that lead into some dry, desolate regions; on the other hand, many once-dreaded deserts now yield enormous shares of our food and fatten much of our livestock. Salt River Valley, Arizona, and Imperial Valley, California, are good examples. For more details visit the

* See "Seeing Our Spanish Southwest" by Frederick Simpich, NATIONAL GEOGRAPHIC MAGAZINE, June, 1947.

Members may obtain additional copies of this map of Southwestern United States (scale 1:2,500,000) and maps published by the Society by writing to the National Geographic Society, Washington 25, D.C. Prices: in United States and Possessions, 50¢ on paper, 50¢ on linen; Index, 25¢. Outside United States and Possessions, 75¢ on paper, \$1.25 on linen. Index, 50¢. All remittances payable in U.S. funds. Postage prepaid.



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Like a Flying Fish, a Wave Rider Hurls His Friend's Telescope in San Diego Bay
 With a suitable climate and a fine beach, San Diego is a popular vacation spot. From its waterfront, it can be reached by plane, train, or automobile. It is a city of sun and fun.

It is a city of sun and fun, with a climate of cactus and scrub trees.

Modern Wealth Surpasses Dreams of 'Golden Ages'

Among the great riches of the world, the Cascades have given us a treasure of fortunes in gold, silver, copper, and iron. From Nevada's Comstock Lode were mined about \$400,000,000 in treasure.

Southwest's vast oil fields help run the Nation. Not only for motor vehicles and power plants, and supply petroleum and natural gas for infinite other uses.

One of the world's best potash deposits is worked in New Mexico. Here also are col-

orals, iron beds, with scores of other rich minerals. The Southwest is a land of great wealth.

Here in view of snow-capped Sangre de Cristo Mountains lies the great city of El Alamo, pasturing its great herds of cattle. Seven Cities in Cimarron is a place of shacks, trailers, and ferry-built homes, all dominated by sprawling atomic-bomb laboratories and factories. In the rich and frenzy of war it could grow no other way.

Unfenced still, it is hemmed in by Indian reservations. No private person can buy a lot here or buy any land from Indians.

But to make it more habitable for Uncle



In Colorado, the Medano Drains into the Sands and Becomes a Lost River

A Indian Spring. A few miles to the west, the stream is a pitiful remnant. Here water is flowing out of the Sand Creek Mountains clockwise. (Grand Canyon, Dinosaur National Monument.)

San's swim-in-sewer staff, the Atomic Energy Commission works now to make the city a decent habitable place. Now come better housing, schools, playgrounds, a shopping center, a 1,000-seat movie theater, a radio station, bowling alleys, and beer gardens.

Manner of migration into our Southwest since traders and trappers opened the Santa Fe and California Trails,* was unique. California's 1849 gold rush lured most migrants straight west. In an odd way this human life figuratively jumped from the Missouri country to the coast.

Indian dangers helped delay settlement of some Southwest States.

Gold fever had already cooled. In California, settlers had turned to growing wheat and land farms were beginning when Indians still killed Union Pacific construction gangs and looted Arizona and New Mexico miners and freight wagon trainsters.

Fabulous Pioneer Days

California was preparing for the Republic's Centennial when the Tucson City was still full of stories of Indian depredations.

Not in 1886, when the notorious Apache warrior, Geronimo, was taken by Gen. Nelson

* Santa Fe Trail, California Trail, Oregon Trail, and Santa Ana National Trails. (See National Geographic Magazine, Vol. 60, No. 1, 1932.)

dunes range from ever-narrow dunes in Great Sand Dunes' National Monument to massive Mesa Verde, among America's best-preserved ruined villages of a bygone people.*

For a baffled early westbound migrant through it they found no passes. Some went west over the Mormon Trail to the north. Others took the Santa Fe Trail, which traders still follow over winding historic Raton Pass from southeastern Colorado to Santa Fe goal for years. Freighters from Mexico, including my own bullhacking great-grandfather,

Later, radical engineers stepped the way righted through that its lit another cigarette. "Let's go!" he roared. Moffat Tunnel through the backbone of our continent. Today this 6-mile tunnel puts Denver on a short straight transcontinental railroad run.

Engineers are tough. They use heavy machinery and wear leather breeches, as the song says, but they've certainly changed Colorado to agrophy.

Once there wasn't enough water in Uncompaghe River to irrigate a city. The engineers found what was said at the time to be the world's longest irrigation tunnel through miles of rock and led the Gunnison River and poured captive waters through that under-the-mountain mole hole into the Uncompaghe.

Abundant water, soil and sun give the state its chief income from farms and livestock. Its tourist trade makes it more profitable to sell beef and wheat as sandwiches than to sell the raw meat. "America's most beautiful state" is a big asset, it says, so please don't abbreviate it, but spell it out!

People moving west take their markets with them. Stores and factories grow with



If Prairie Dogs Paid Head Tax, How the Cash Would Roll In!

From New Mexico to the Dakotas these cute little rodents dig out systems of underground tunnels and surface holes. Many "prairie dogs" by the truckload had sold canned corn with their neighbors. Prairie dogs like big families, not "planned" parenthood or "spaced" children.

population. Now the State makes scores of products from its abundant supplies of uranium, explosives, mining machinery, clay and wood products to beer cans and advertising films.

It mines coal, gold, silver, copper, lead, zinc, and more than half of our polytheneum. Its less common minerals include tungsten and uranium, the latter a source of power for atomic bombs. In its northwest it finds new oil fields.

To the high, cool, captivating Colorado mountains and valleys look from the Midwest. They climb Pikes Peak, romp

*See "Ancient Cliff Dwellers of Mesa Verde" to the West, National Geographic Magazine, September 1949.

the great Indian Fair, the great dances, and maybe "roll the bones" in such once-rowdy gold camps as Creede and Cripple Creek.

Finally they join that tourist stream through Durango to where canyons hide those mysterious abandoned homes of cliff dwellers.

Empty Homes of Vanished Americans

These empty houses of vanished Americans stretch from Colorado to Arizona.*

Our cross-country motorcars shuttle this Southwest, mostly on U. S. Route No. 66. From two to three million a year ride these trails in New Mexico and Arizona, and to and from California.

Many stop at light-hearted, fiesta-loving Santa Fe. Remember Willa Cather's *Death Comes for the Archbishop*. From there up the Rio Grande an Indian-village-bordered road leads to ancient Taos. "Mountain men" met there to carouse, dance fandangos with swartthy senoritas, and trade furs for traps and ammunition. Kit Carson's grave is there, and an art colony which began more than fifty years ago when pioneer painters came and started using Indian models.

It was after the close of the War with Mexico in 1848 that we got most of this Southwest. One cause of that war was disputes between us and Mexicans over southwestern trail and trade problems.

Much of today's vast Santa Fe Railway system closely parallels the Santa Fe Trail, as much of the Southern Pacific system follows the old overland Butterfield stage line that kept 1,500 horses and mules galloping between St. Louis and San Francisco via warmer, more level Southwest pathways.

But wait! a lopsided United States map ours would still be if all our western trade routes now ended at Mexican customhouses on that international border as roughly drawn between us and Mexico 100 years ago!

Wait a fateful day for all Americans when Gen. Stephen W. Kearny raised the Stars and Stripes over the ancient Palace of the Governors at Santa Fe and said:

"New Mexicans! We have come among you to take possession of New Mexico, which we do in the name of the Government of the United States. We have come as friends, to better your condition and to make you a part of the Republic of the United States. . . ."

Taking Kearny at his word, New Mexicans from that day became patriotic, useful American citizens, as witness their fine record in our World Wars and in public life.

Mexican born to this day largely works the Southwest mines and forests, maintains its highways and railroads, herds its cattle

shears its sheep and harvests its crops.

In that sunny, pleasant land today are around 1,000,000 people of Spanish-Mexican racial origin, and in some areas you still hear more Spanish than English, as in Rio Arriba County, in northern New Mexico.

This was Spaniards' country for more than 300 years. Among their oldest-known written records is the Spanish explorer Juan de Oñate's lines etched on Inscription Rock, in El Morro National Monument in western New Mexico. In translation it reads:

Passed by here the chief Don Juan de Oñate from the discovery of the sea of the south on the 16th of April, 1605 [sometimes read 1606]

Oñate meant he had seen the Gulf of California.

To reach this rock you ride southeast from Gallup, New Mexico, where each year is held the great Intertribal Indian Ceremonial with sand painters, rug weavers, Navaho silver smiths, dancers, and blacksmiths.

This colossal rock rises beside an early Indian trail, and on it are scratched the names of many pioneer Americans who also "passed by here."

Another famous New Mexico rock is historic Acoma, with an ancient Indian village on top of it. From here Spaniards once jumped to save their lives. No "battle above the clouds" was ever more astounding!

Spanish soldiers who climbed this rock were set upon by Indian villagers.

Seeing their brothers being trained, surviving Spaniards leaped from the parapets of this sky city and dropped into soft, sloping sands drifted about the foot of 357-foot cliffs. Of the five who jumped, four lived!

Our First State History

In Albuquerque I talked with Gilberto Espinosa, one of whose ancestors came with the Conquistadors; for the Quivira Society he translated Gaspar Perez de Villagra's *History of New Mexico*, first published in Spain in 1610.

Villagra's is a "rhyming history"—the first of all our State stories—and it details the horrible butchery high atop Acoma Rock. You can reach it now by automobile, and have a goat meat and corn meal lunch with present-day Indians for a dollar.

It's on the sandy waste, not far from here, that Uncle Sam now fires gilded rockets.

This Southwest is still Indian country; here you will find thousands of Apaches, Pimas,

* See "Indian Tribes of Pueblo Land," by Matthew W. Stirling, National Geographic Magazine, November, 1940.



—S. C. L. 100

A Victim of Greed Leaves the Lesson, "Don't Bite Off More Than You Can Chew"

THE STORY OF THE man who has been a victim of greed in Lake Mead (page 80). The bird died of starvation because he was too greedy to eat less.

and the people of the United States. The man who has been a victim of greed in Lake Mead (page 80). The bird died of starvation because he was too greedy to eat less.

Life Along the Mexican Border

There is no other land in the world where the people are so poor and so hungry as in the border region of the United States and Mexico. The people of the United States and Mexico are so poor and so hungry as in the border region of the United States and Mexico.

The Southwest border of the United States is the most dangerous place in the world. The people of the United States and Mexico are so poor and so hungry as in the border region of the United States and Mexico.

The man who has been a victim of greed in Lake Mead (page 80). The bird died of starvation because he was too greedy to eat less.

The man who has been a victim of greed in Lake Mead (page 80). The bird died of starvation because he was too greedy to eat less.

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A Woolly Army in Single File Follows Its Leaders into a New Mexico Canyon.
This herd, photographed six miles east of Grants, dies out a hunger on ranges so dry that cattle or horses could not survive.

farmers who thought they lived in Mexico woke up to find themselves in Texas, or vice versa.

On our map you see this Rio Grande rising away up on the Continental Divide, in southwestern Colorado, near where 11 members of Col. John C. Frémont's party froze to death in 1848 when hunting a bear—on snow which a railroad built a foot higher than.

The whole tortuous course of this great river was traced in 1938 by the National Geographic Society.* From a rocky land of trembling aspens, heavers, blizzards, and mountain sheep the party worked its long way down to the hot, lush lowlands of Matamoros, Gulf hurricanes, pelicans, and tarpon. On their way, Indian guides killed three mountain lions, which we happened eat.

You don't realize how wild much of America still is till you explore certain remote areas of this Southwest. Parts of Utah are so overrun with crop-robbing deer that farmers are frantic. In other places you may ride 20 miles and never see a house.

Mountain lions are so numerous that in some rougher regions it's almost impossible

to raise colts. Often you see full-grown horses with their backs all scratched up from attacks by these big cats. Many cross over from Mexico to hunt meat on our border cow ranches.

You see their tracks along stream beds. On a few mountain paths, as in the Texas Big Bend, you should watch your step, lest you put your foot in a lion trap which some out-of-rancher has set for a bold marauder who has been killing his stock.

Each year Uncle Sam's official hunters of these predators kill them by dozens.

A Frontier That Made History

In southern New Mexico, near El Paso, the international line crawls from the Rio Grande and starts west, overland. Here stands Monument Number One, the first in a long string of stone and iron outposts which marks the land boundary extending westward. So far, monuments stand in gaps of miles, and it is common to see no landmarks. You may know just where the boundary lies; these monuments are not intended to mark it.

* See "The Rio Grande from the Mountains to the Sea," National Geographic Magazine, Vol. 32, No. 2, 1918.



McClure H. Spence Photo Co.

... Drinks at a Drying Water Hole, and Scales the Mesa's Rumparts for Meager Grass
Southwestern sheep were introduced by Spaniards. Multiplying on Indian land, they create a tremendous
cattle problem.

Next, Nogales, Arizona, is the place where the boundary broke off northwest or west. Had it run straight west, we would now own all the Colorado River Delta and none of Baja, or Mexican California. Some claim this was originally meant to be ours, under the Gadsden Purchase, but that somehow the ruler "slipped" when the new border was being measured.

Always, since Mexico invaded Texas and Santa Anna fought Sam Houston at San Jacinto, and Gen. Zachary Taylor marched for Monterrey, Mexico, in 1846, events along the line have made front-page news.

Luxury Annals of the Border

When the 1880s were ended here after 32,000 immigrants had crossed, Emperor Maximilian came to the Arizona border to be shot and have his Empress Carlotta go mad.

Adventurous border annals show how time and again filibusters have crossed the line, either to found colonies or foment revolution. Some were comic-opera fancies; some were tragic.

Spectacular was the attempt of Henry A. Crabb to settle his party of Californians in

Sonora in 1847. Crossing from Arizona, his party was attacked at Tubora, 60 miles south of the border, conquered, and all except one boy were executed. Crabb's head was cut off and exhibited in a jar of alcohol. On the bullet-scarred walls of the old Tubora Mission you can see a metal tablet, set up by the Mexicans, marking the site of the battle.

Bandit leader Pancho Villa jumped the line to raid Columbus, New Mexico. Gen. John J. Pershing's punitive expedition chased him deep into Mexico, only to lose him. But what a night! Five American 10th Cavalry troops I knew died on that dash down into Chihuahua.

As American consul I was stationed at Nogales, Sonora, just across the line from the Arizona town of the same name, during the Carranza revolution.

Once fighting got so hot that Gen. Alvaro Obregon hurled his dead where they fell some on my tennis court.

To get some sleep, I borrowed a baggage car from the railroad company, put my star and archives on board, and a switch engine pushed us across to Arizona. Gen. Fred Funston, coming to call, said, "This is the first



With Tail Ties and Bone-crushing Hoofs, a Wild Horse Fights His Wary Soldiers

By the time you reach the head of the river, you are in a very different world. The river is a great deal longer than it is wide, and the water is very shallow. The river is a great deal longer than it is wide, and the water is very shallow. The river is a great deal longer than it is wide, and the water is very shallow.

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Through the river, you are in a very different world. The river is a great deal longer than it is wide, and the water is very shallow. The river is a great deal longer than it is wide, and the water is very shallow. The river is a great deal longer than it is wide, and the water is very shallow.

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are selling between 100 and 150 head of stock. The river is a great deal longer than it is wide, and the water is very shallow. The river is a great deal longer than it is wide, and the water is very shallow. The river is a great deal longer than it is wide, and the water is very shallow.

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Desert Setting for Sublimity Movies

On the river, you are in a very different world. The river is a great deal longer than it is wide, and the water is very shallow. The river is a great deal longer than it is wide, and the water is very shallow. The river is a great deal longer than it is wide, and the water is very shallow. The river is a great deal longer than it is wide, and the water is very shallow.

That will be a company of motion-picture actors working out here on the desert—which is good African scenery.

"Naked as Adam and Eve." That's how Yuma looked to Father Kino, the Spanish Jesuit, when Father Eusebio Francisco Kino passed this way and was convinced California was not an island.

They're still here, these Yumas. And still their bucks may kill rabbits with stakes and plaster their hair with mud to kill the lice. But squaws wear petticoats now and squat on Yuma's railway station platform, peddling their crude wares to tourists.

The Colorado River separates Arizona from Nevada and from California, as the map shows. Till men tamed it, its river ran wild. Once, in flood, it slipped off the ridge on which its lower reaches run and scoured deep channels into Imperial Valley to fill Salton Sea. Hereabouts people live 200 feet below sea level.

Huover Dam, world's highest, blocks this river between Arizona and Nevada to form 115-mile-long Lake Mead, whose big fish explore water-filled caves in submerged canyon walls (page 816). Over the dam's crest is a highway till it was built, no wheel ever rolled across the Colorado River portion of Nevada-Arizona border.

Water for Seven States

Equitable division of this river's water among the seven States it drains is one of the riddles of the West. But that's another story—a long, hard one.

Thousands of people would have to move out of southern California today were it not for water taken from the Colorado near Parker Dam (below Hoover Dam) and carried over deserts and under mountains to serve farms and cities. Even the Colorado is insufficient: now the Golden State talks of bringing water from Columbia River sources in faraway Idaho, and even of taking water from the Pacific and desalting it!

California! That very name evokes an image: Yosemite, Golden Gate, Big Trees, oranges. Sir Francis Drake's *Golden Hind* anchored off its coast, and Drake came ashore to claim the land for his Queen.

What geological confusion! Mount Whitney, United States' highest mountain, straddles California-Nevada, our deepest depression.

Longways, trails, airbuses run into California from north and east and from Mexico, and air and steamer lines tie it to Pacific ports.

It still mines gold and saws timber, but its infinite factories, its oil and gas, its colossal farms, orchard, and vineyard areas yield now

many times all the wealth that ever came from its gold mines.

Flying east from its Edenlike valleys, as from Sacramento to Reno you see another world unfold—an empty world of dried-up lakes, happily broken by irrigated valleys green with alfalfa and watered canyons choked with verdure and musical with the song of birds. Ghost towns litter around some worked-out bonanza mines that made men rich beyond their dreams.

Every year Nevada State chemists still assay 3,000 to 6,000 ore specimens and nearly every one of the 12,500 people in the fly area earn a living, one way or another, working the giant copper mines. One of earth's biggest man-made holes is the open pit mine near Ruth, from which more than 230 million tons of material have been hauled! All the trucks in the world couldn't hold that pile!

Gay, glittering, and rolling in money, open-all-night and carefree Las Vegas "City of Chance," in southern Nevada. It says it has sun by day and fun by night. It's old. It was a fort, a Mormon outpost, a way-side stop for water, but it boomed when near-by Hoover Dam was being built. Now it's Nevada's second city. Visitors flock to see the great dam, to bask in this Cairelike climate, or to flirt with fortune at the gaming tables along "Glitter Gulch" and neon-lighted "Sunset Strip."

Wealth of a "Wilderness"

Enlarged photographs of moon valleys and craters come to mind when you fly back over empty areas on the way to Utah. As your plane's shadow sweeps over vast dry flats left by receding Great Salt Lake, where racing drivers set world records and etch speeding motor tracks in league-long straight lines, you may reflect, "What a worthless wilderness!"

But come back later, on the ground, and look! Mountains of potash are recovered, as around Wendover; and the strange dead sea itself is virtually an inexhaustible source of salt taken from its bitter waters by solar evaporation.

It's like flying over the Sahara and coming suddenly upon Cairo and the Pyramids to cross this salty waste, late on a summer afternoon, and glimpse the glistening towers and temples of Salt Lake City reflecting the sunset. Truly it seems a dream city then, like some imaginary New Jerusalem of the ballads, or maybe such a golden city as Coronado went seeking.

High mountains form a backdrop where sky fans frolic in snowy times, where sheep

limb up to graze in summer, and where salt lickers build cottages and whip the rushing brooks for trout. All up and down scenic Salt Lake Valley fat cattle feed in green pastures, and water flows through neat irrigation ditches, as laid out when Brigham Young brought his Latter-day Saints here and said, "This is the place."

The mysterious Temple, the sea gull monument, the Lion House where Brigham Young and his large family lived, the many Mormon cooperatives—including their great department store—and the vast high-domed Tabernacle with its amazing acoustics and great pipe organ, have all been objects of interest to decades of visitors.

But few transients realize the economic power of Utah or its strategic place in our changing Southwest.

Farming was the State's first business. Its orchards are fragrant; its barnyards are musical with soft moos and excited cackles. But today half its people make a living, one way or another, from the mines.

Moving a Mountain—for Copper

America's largest surface copper mine is that at the Kennecott Copper Corporation at Bingham Canyon. Here puny man has literally moved a Gibraltarlike mass of earth; he moved what was a mountain and left a hole in its place.

Miles of road grades run around the inside slopes of this hole, making ridges that look like the terraced rice fields of Luzon. Terraces are lined together by a switchback railway for ore trains.

In late afternoon, powdermen blast more ore from the sides of the big hole. Then smoke, dust, and rocks fly high in the air; workers run for cover, and the roar of the great explosions echoes back and forth among the peaks like artillery fire between opposing armies.

Greatest known concentration of coal in the United States lies under southwest Wyoming, western Colorado, and eastern Utah. Salt Lake Valley is now our chief smelter center for copper and lead.

With such abundant coal, as well as iron ore, copper, lead, zinc, gypsum, and limestone, Utah is the movement source of pig iron, coke, cast-iron pipe, steel and steel shapes, as well as copper ingots and gypsum plasterboard for the factories and foundries and builders on the Pacific coast. On our new map railway lines show how well Utah is located as a pivotal center for shipments of these materials to any port from Seattle to San Diego.

The so-called "colonial status" which our west craves, long held, with relation to the

more mature industrial development of our East, is largely changed since the war.

This came when Uncle Sam spent billions on munitions plants, chemical works, airplane factories, and shipyards west of the Rockies. Here in Utah he built plants to make arms, gasoline, parachutes, radar tubes, chemicals—many things. Here, too, he built one of Navy's largest supply depots, Air Force repair shops, and great ammunition storage dumps (because this was a safe place). Here, also, he built giant steelworks.

Since Union Pacific Railroad came in 1869, Utah has produced more than two billion dollars in base and precious metals, but it was the war boom which brought such works as the \$200,000,000 steel plant at Provo. Now privately owned, this plant yields some 1,200,000 tons a year of billets, plates, shapes, and strips in coils. This product is also being shipped, in part, to the steel mills in California.

What changes! There wasn't loose iron enough in the whole Rocky Mountains even to shoe their teams or make a keg of nails when the forty miners passed this way.

Some one little California city, say Palo Alto or Eureka, probably has more whites now than lived in that whole State when gold seekers first staked claims and shot the claim jumpers, or when Commodore John A. Sloat of the U. S. Navy dropped his mudbank at Monterey and ran up the American flag on July 7, 1846.

There's as much snow now in Sierra Nevada gorges as when the starving snowbound Donner party was trapped there; but today the shouting ski jumpers rejoice in drifts.

Pioneer immigrants hated and feared the desert, as when lost Jayhawkers suffered the thirsty horrors of dreadful Death Valley. Now, as at Palm Springs, where main-street motels have sold for \$1,000 a front foot, winter visitors pay \$30 a night at ritzy hotels—merely to sleep in the desert!

New Names Appear on Map

Mountains are where they were. So are rivers' rocky gorges and the ancient pueblos. But still more deserts turn to gardens. Mushrooming new towns surprise even the Southwest. Each year new place names appear on the map; new factories belch fresh smoke, new generators whirl at new power dams, and still the migrant tide pours in.

Sit quietly in any roadside motor court when the day's rush has ebbed, and in fancy you hear the tramp of westbound millions.

For a list of the States covered see the Geographic Magazine Cumulative Index.

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In carrying out the purposes of which it was organized, the Society, through the National Geographic Society, publishes the National Geographic Magazine. All correspondence should be addressed to the National Geographic Society, Washington, D. C.

Articles and photographs are desired. For material, the Magazine will give generous consideration to such.

In addition to the editorial and photographic services constantly being made, the Society also sponsors more than two hundred expeditions, some of which require years of field work to bring the results back.

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T. Piggy-

for marrying me
in the first place...

for bringing up our children—right?

for the 2,048 pairs $i \neq k$ as follows:

for finding my mother and my sister
Hester knows no more!

for long immovable distances.

for the first time in the history of the

Figure 1. The effect of the number of iterations (n) on the accuracy of the proposed algorithm. The error rate decreases as the number of iterations increases.

for training a model to learn
a set of binary labels (e.g., 0 and 1)

$$\int_{\partial \Omega} (\nabla u \cdot \nu) \varphi = - \int_{\Omega} \Delta u \varphi + \int_{\Omega} \nabla u \cdot \nabla \varphi$$

For each of the 100 trials, the subject was presented with a target stimulus (a 100-Hz tone) and a comparison stimulus (a 100-Hz tone with a 10% frequency modulation). The subject was asked to judge whether the comparison stimulus was higher or lower in frequency than the target stimulus. The subject's response was recorded and the trial was repeated 100 times.

$$f(r) = (1 + r^2)^{-1/2} \quad f(r) = 1 \quad f(r) = 0.7$$

$$f(r) = 1 - 0.2r^2 \quad f(r) = 1 - 0.1r^2 \quad f(r) = 1 - 0.05r^2$$

June



THE CHRISTMAS MARCH 18TH 1893

1. The first part of the document is a list of names and their corresponding addresses. The names are: John Doe, Jane Smith, and Bob Johnson. The addresses are: 123 Main St, 456 Elm St, and 789 Oak St.

2. The second part of the document is a list of items and their corresponding prices. The items are: Apples, Bananas, and Oranges. The prices are: \$1.00, \$0.50, and \$0.75.

3. The third part of the document is a list of dates and their corresponding events. The dates are: 1/1/2020, 2/1/2020, and 3/1/2020. The events are: New Year's Day, Valentine's Day, and St. Patrick's Day.

4. The fourth part of the document is a list of countries and their corresponding flags. The countries are: United States, Canada, and Mexico. The flags are: US Flag, Canadian Flag, and Mexican Flag.

5. The fifth part of the document is a list of animals and their corresponding sounds. The animals are: Dog, Cat, and Bird. The sounds are: Barking, Meowing, and Chirping.

6. The sixth part of the document is a list of fruits and their corresponding colors. The fruits are: Apple, Banana, and Orange. The colors are: Red, Yellow, and Orange.

7. The seventh part of the document is a list of vegetables and their corresponding colors. The vegetables are: Carrot, Broccoli, and Spinach. The colors are: Orange, Green, and Green.

8. The eighth part of the document is a list of flowers and their corresponding colors. The flowers are: Rose, Tulip, and Daffodil. The colors are: Red, Yellow, and Yellow.

9. The ninth part of the document is a list of birds and their corresponding colors. The birds are: Parrot, Pigeon, and Sparrow. The colors are: Multi-colored, Grey, and Brown.

10. The tenth part of the document is a list of insects and their corresponding colors. The insects are: Butterfly, Ant, and Flea. The colors are: Multi-colored, Brown, and Brown.

11. The eleventh part of the document is a list of reptiles and their corresponding colors. The reptiles are: Snake, Lizard, and Turtle. The colors are: Green, Brown, and Brown.

12. The twelfth part of the document is a list of mammals and their corresponding colors. The mammals are: Elephant, Lion, and Tiger. The colors are: Grey, Brown, and Orange.

13. The thirteenth part of the document is a list of fish and their corresponding colors. The fish are: Goldfish, Clownfish, and Shark. The colors are: Yellow, Orange, and Grey.

14. The fourteenth part of the document is a list of plants and their corresponding colors. The plants are: Sunflower, Tulip, and Daffodil. The colors are: Yellow, Yellow, and Yellow.

15. The fifteenth part of the document is a list of trees and their corresponding colors. The trees are: Oak, Pine, and Maple. The colors are: Brown, Green, and Green.

16. The sixteenth part of the document is a list of rocks and their corresponding colors. The rocks are: Granite, Limestone, and Sandstone. The colors are: Grey, White, and Tan.

17. The seventeenth part of the document is a list of minerals and their corresponding colors. The minerals are: Gold, Silver, and Copper. The colors are: Yellow, Grey, and Red.

18. The eighteenth part of the document is a list of metals and their corresponding colors. The metals are: Iron, Steel, and Aluminum. The colors are: Grey, Grey, and Silver.

19. The nineteenth part of the document is a list of plastics and their corresponding colors. The plastics are: PVC, Polyethylene, and Polystyrene. The colors are: White, White, and White.

20. The twentieth part of the document is a list of fabrics and their corresponding colors. The fabrics are: Cotton, Wool, and Silk. The colors are: White, White, and White.

21. The twenty-first part of the document is a list of foods and their corresponding colors. The foods are: Apple, Banana, and Orange. The colors are: Red, Yellow, and Orange.

22. The twenty-second part of the document is a list of drinks and their corresponding colors. The drinks are: Soda, Juice, and Water. The colors are: Clear, Clear, and Clear.

23. The twenty-third part of the document is a list of clothing items and their corresponding colors. The clothing items are: Shirt, Pants, and Shoes. The colors are: White, White, and White.

24. The twenty-fourth part of the document is a list of accessories and their corresponding colors. The accessories are: Hat, Scarf, and Gloves. The colors are: White, White, and White.

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49. The forty-ninth part of the document is a list of foods and their corresponding colors. The foods are: Apple, Banana, and Orange. The colors are: Red, Yellow, and Orange.

50. The fiftieth part of the document is a list of drinks and their corresponding colors. The drinks are: Soda, Juice, and Water. The colors are: Clear, Clear, and Clear.

51. The fifty-first part of the document is a list of clothing items and their corresponding colors. The clothing items are: Shirt, Pants, and Shoes. The colors are: White, White, and White.

52. The fifty-second part of the document is a list of accessories and their corresponding colors. The accessories are: Hat, Scarf, and Gloves. The colors are: White, White, and White.

53. The fifty-third part of the document is a list of household items and their corresponding colors. The household items are: Table, Chair, and Bed. The colors are: White, White, and White.

54. The fifty-fourth part of the document is a list of vehicles and their corresponding colors. The vehicles are: Car, Truck, and Bus. The colors are: White, White, and White.

55. The fifty-fifth part of the document is a list of animals and their corresponding colors. The animals are: Dog, Cat, and Bird. The colors are: White, White, and White.

56. The fifty-sixth part of the document is a list of plants and their corresponding colors. The plants are: Sunflower, Tulip, and Daffodil. The colors are: Yellow, Yellow, and Yellow.

57. The fifty-seventh part of the document is a list of trees and their corresponding colors. The trees are: Oak, Pine, and Maple. The colors are: Brown, Green, and Green.

58. The fifty-eighth part of the document is a list of rocks and their corresponding colors. The rocks are: Granite, Limestone, and Sandstone. The colors are: Grey, White, and Tan.

59. The fifty-ninth part of the document is a list of minerals and their corresponding colors. The minerals are: Gold, Silver, and Copper. The colors are: Yellow, Grey, and Red.

60. The sixtieth part of the document is a list of metals and their corresponding colors. The metals are: Iron, Steel, and Aluminum. The colors are: Grey, Grey, and Silver.

61. The sixty-first part of the document is a list of plastics and their corresponding colors. The plastics are: PVC, Polyethylene, and Polystyrene. The colors are: White, White, and White.

62. The sixty-second part of the document is a list of fabrics and their corresponding colors. The fabrics are: Cotton, Wool, and Silk. The colors are: White, White, and White.

63. The sixty-third part of the document is a list of foods and their corresponding colors. The foods are: Apple, Banana, and Orange. The colors are: Red, Yellow, and Orange.

64. The sixty-fourth part of the document is a list of drinks and their corresponding colors. The drinks are: Soda, Juice, and Water. The colors are: Clear, Clear, and Clear.

65. The sixty-fifth part of the document is a list of clothing items and their corresponding colors. The clothing items are: Shirt, Pants, and Shoes. The colors are: White, White, and White.

66. The sixty-sixth part of the document is a list of accessories and their corresponding colors. The accessories are: Hat, Scarf, and Gloves. The colors are: White, White, and White.

67. The sixty-seventh part of the document is a list of household items and their corresponding colors. The household items are: Table, Chair, and Bed. The colors are: White, White, and White.

68. The sixty-eighth part of the document is a list of vehicles and their corresponding colors. The vehicles are: Car, Truck, and Bus. The colors are: White, White, and White.

69. The sixty-ninth part of the document is a list of animals and their corresponding colors. The animals are: Dog, Cat, and Bird. The colors are: White, White, and White.

70. The seventieth part of the document is a list of plants and their corresponding colors. The plants are: Sunflower, Tulip, and Daffodil. The colors are: Yellow, Yellow, and Yellow.

71. The seventy-first part of the document is a list of trees and their corresponding colors. The trees are: Oak, Pine, and Maple. The colors are: Brown, Green, and Green.

72. The seventy-second part of the document is a list of rocks and their corresponding colors. The rocks are: Granite, Limestone, and Sandstone. The colors are: Grey, White, and Tan.


73. The seventy-third part of the document is a list of minerals and their corresponding colors. The minerals are: Gold, Silver, and Copper. The colors are: Yellow, Grey, and Red.

74. The seventy-fourth part of the document is a list of metals and their corresponding colors. The metals are: Iron, Steel, and Aluminum. The colors are: Grey, Grey, and Silver.

A TRIUMPH OF
AMERICAN GENIUS

A red wax seal with the words "AMERICAN GENIUS" embossed on it. The seal is rectangular and has a slightly irregular, aged appearance. The text is in a bold, sans-serif font. The seal is placed on a light-colored surface.

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You Can't Beat

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Interwoven Socks



THE KITCHEN THAT'S A SLAVE TO YOU

(Instead of the reverse)



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Butter will be melted. Eggs will be broken. Flour will be sifted. Sugar will be measured. And the kitchen will be a slave to you.

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It's the kitchen that's the General Electric. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric.

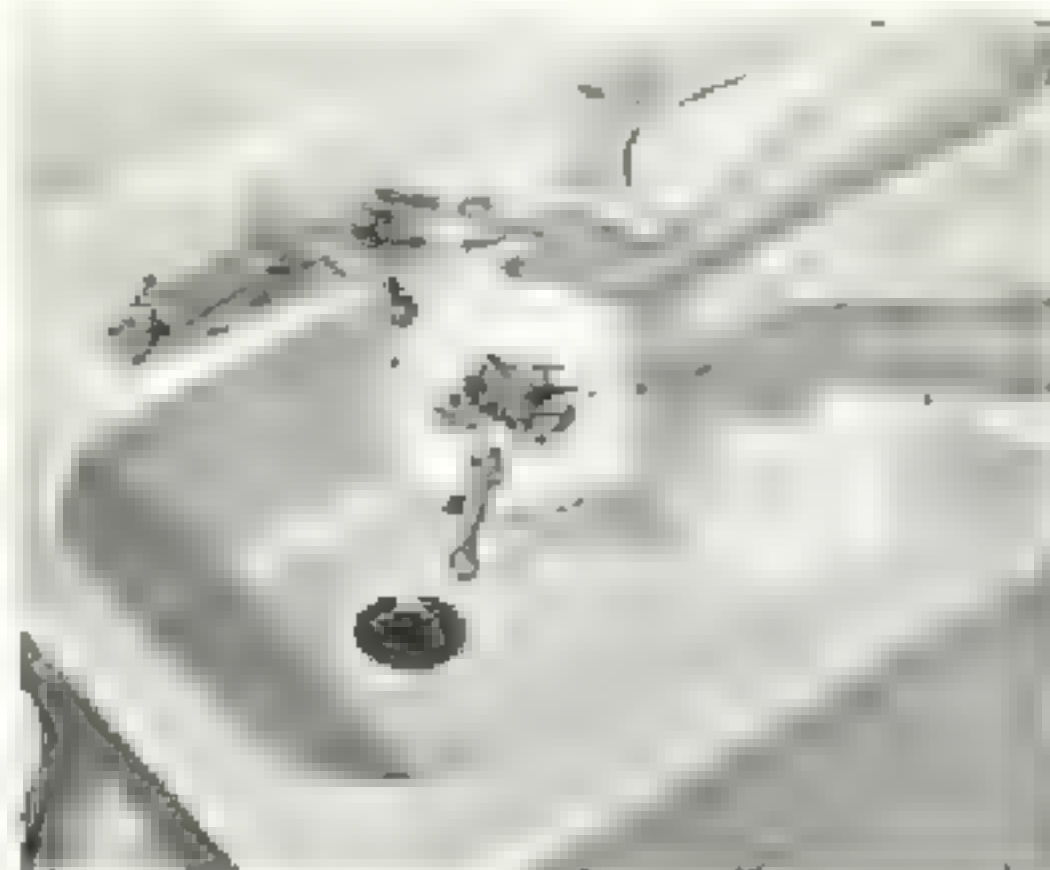
It's the kitchen that's the General Electric. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric.



IMPORTANT NOTE: The entire kitchen equipment for General Electric is designed to be a slave to you. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric.



Automatically, the G-E Dishwasher washes, rinses, and dries your dishes. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric. It's the kitchen that's the General Electric.



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FOUNTAIN PEN



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16mm. color film
16mm. color film
16mm. color film
16mm. color film

FILMO AUTO-8 CAMERA

16mm. color film
16mm. color film
16mm. color film
16mm. color film
16mm. color film

FILMO COMPANION CAM- ERA (16mm. film)

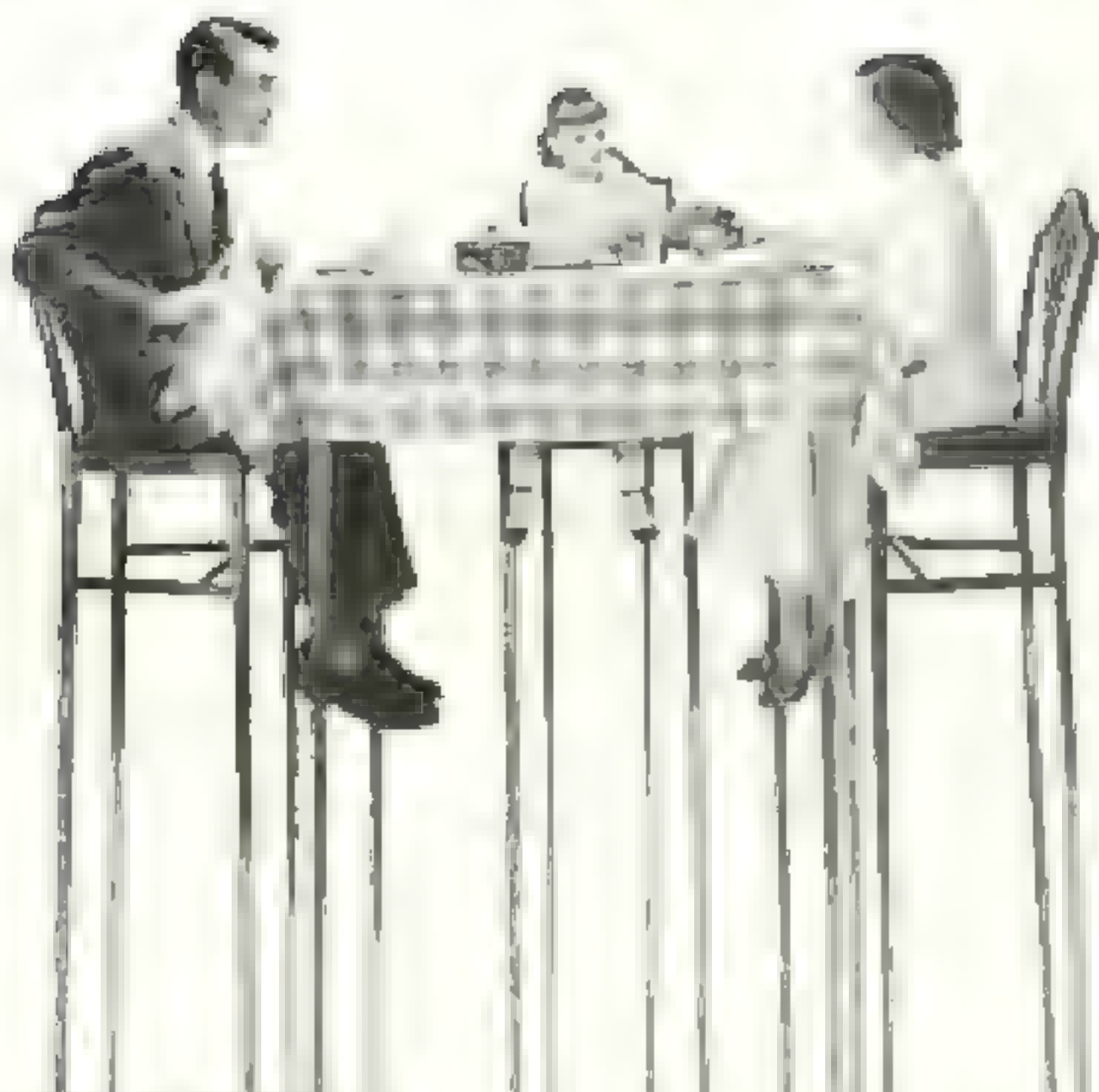
16mm. color film
16mm. color film
16mm. color film
16mm. color film
16mm. color film

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Has the high cost of living

sent your table costs sky high, too?

When I was troubled as I am about high prices. They mean that fewer people can buy what's needed for survival.

It is interesting to find this trend by doing a within-group regression and quality regression over time. The two regression lines meet at a significant intersection. And the National Bureau of Economic Research says that the quality of lowest quality goods

Here are some figures which show how trade prices compare with food prices, from 1943 to 1948:

Increase in cost of food	116%
Increase in cost of fluid milk	78%

Notice that milk has not increased in price as much as the average of other foods. Our price level of our milk this year averaged less than the cost of buying it back in 1947—5¢ less than the postwar peaks business nations and travel less than the average price in all industries.

Minister of the Interior, Department of the Interior, Washington, D.C. 20540

The House of Representatives has today
 voted to suspend the writ of habeas corpus,
 during the absence of the prisoners from
 the court of appeals. How will the president
 exercise his right to suspend the writ? The large-
 est number of members of the House
 possible are

An aspect of the program, however, is that Americans consume 200 T of corn a year for ethanol. Germany consumes 100 T of corn a year for ethanol. The U.S. consumes less than 50 T. An National Energy's report in its early 1990s, 1947 was less than 10 T.

NATIONAL DAIRY
PRODUCTS CORPORATION

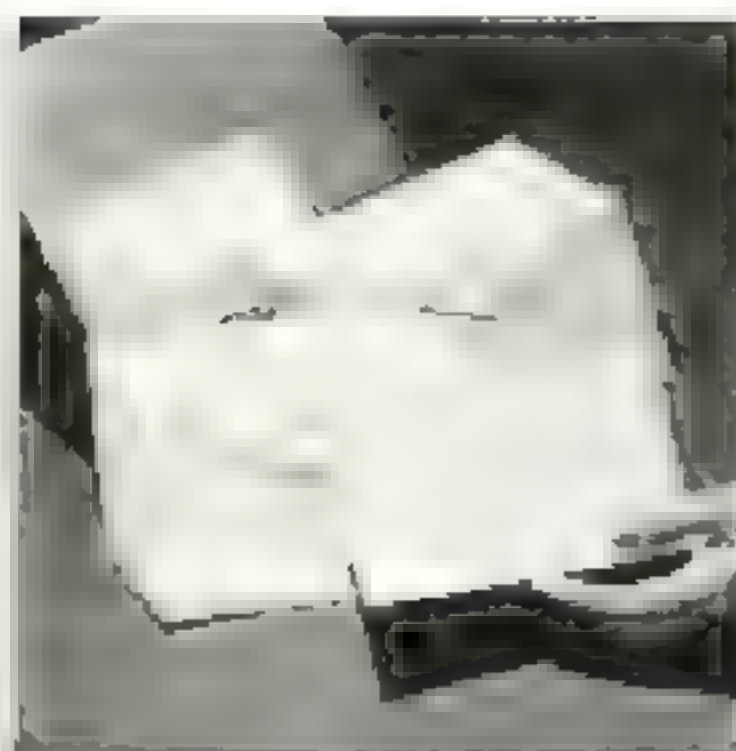




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Bacteria bigger than a Terrier

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Then RCA scientists opened new windows into a hidden world with the first commercially practical electron microscope. In the laboratory it has revealed micro-organisms at 20,000 diameters and over. 100,000 is commonplace... and such figures.

picture this: A man magnified 200,000 times could be with his head in Washington, D. C., and his feet in New York... A human similarly magnified would appear as large as the Washington Monument.

Scientists see both bacteria, and viruses—and have even photographed a molecule! Specialists in other fields—such as industry, mining, agriculture, forestry—have learned unsuspected truths about natural resources.

Development of the electron microscope as a practical tool of research is probably the most striking example of RCA research leadership. This leadership is part of all instruments bearing the names RCA and RCA Victor.

For more information, write to RCA, Dept. 100, New York, New York. Or to RCA, Dept. 100, Camden, New Jersey. Or to RCA, Dept. 100, Hickory, North Carolina. Or to RCA, Dept. 100, St. Louis, Missouri. Or to RCA, Dept. 100, Chicago, Illinois. Or to RCA, Dept. 100, San Francisco, California. Or to RCA, Dept. 100, Los Angeles, California. Or to RCA, Dept. 100, Dallas, Texas. Or to RCA, Dept. 100, Houston, Texas. Or to RCA, Dept. 100, Phoenix, Arizona. Or to RCA, Dept. 100, Portland, Oregon. Or to RCA, Dept. 100, Seattle, Washington. Or to RCA, Dept. 100, San Diego, California. Or to RCA, Dept. 100, San Jose, California. Or to RCA, Dept. 100, Santa Clara, California. Or to RCA, Dept. 100, Sunnyvale, California. Or to RCA, Dept. 100, Tempe, Arizona. Or to RCA, Dept. 100, Tucson, Arizona. Or to RCA, Dept. 100, Yuma, Arizona.



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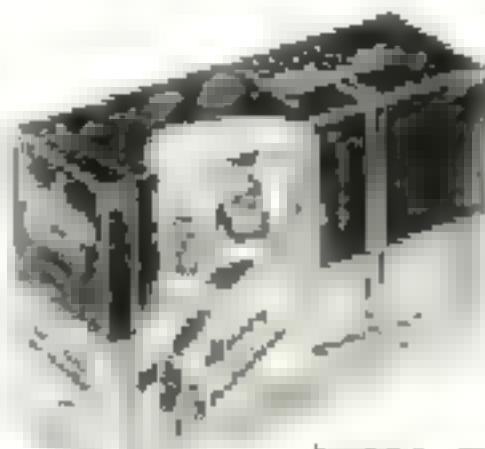
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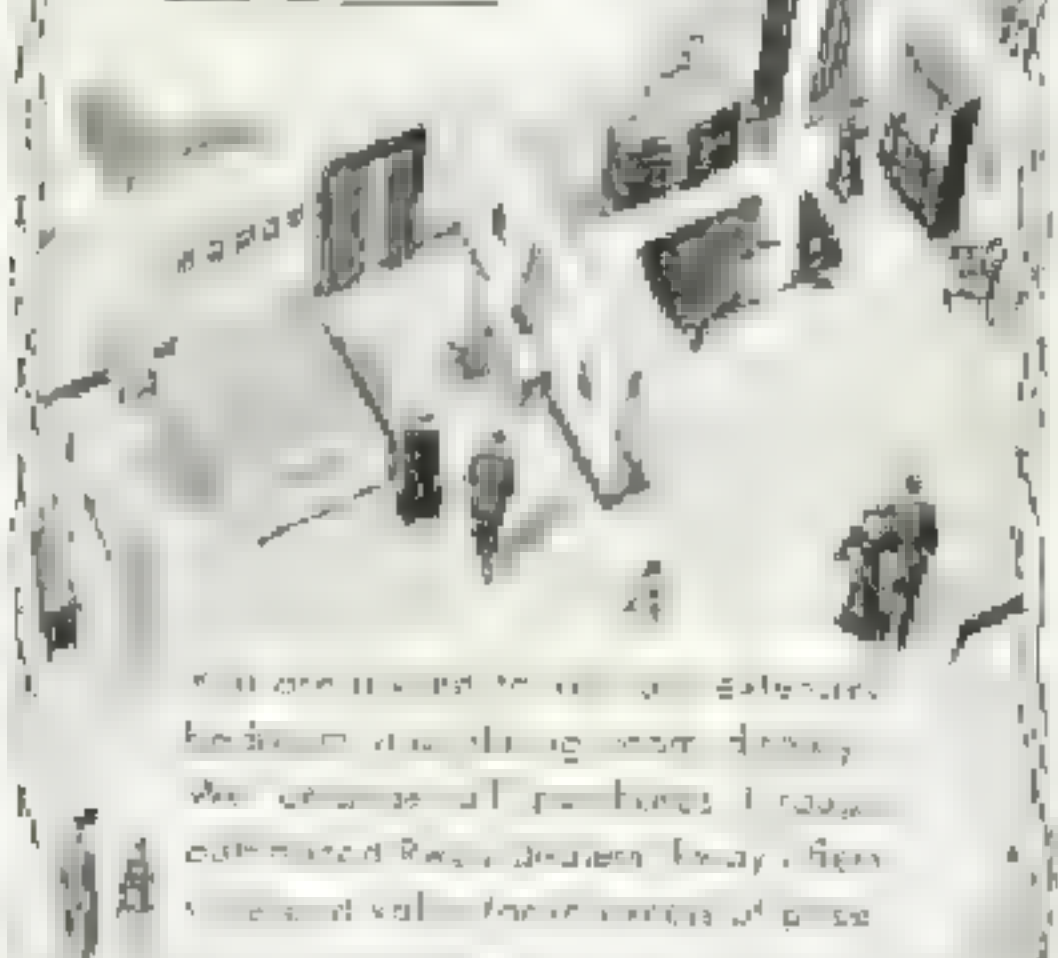


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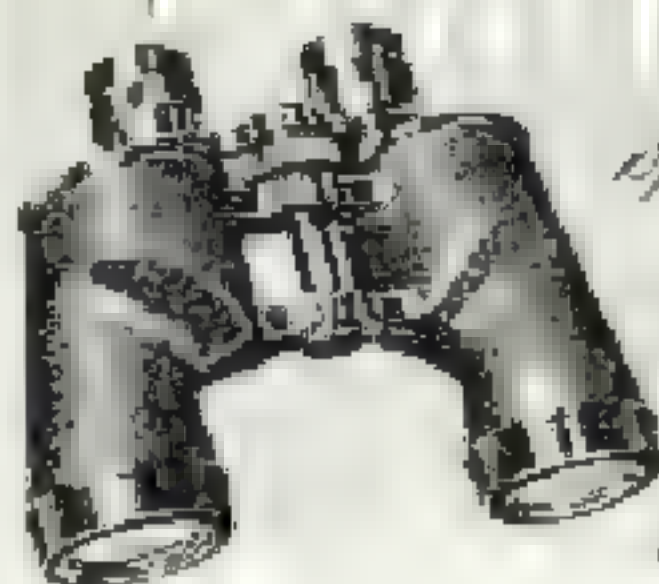
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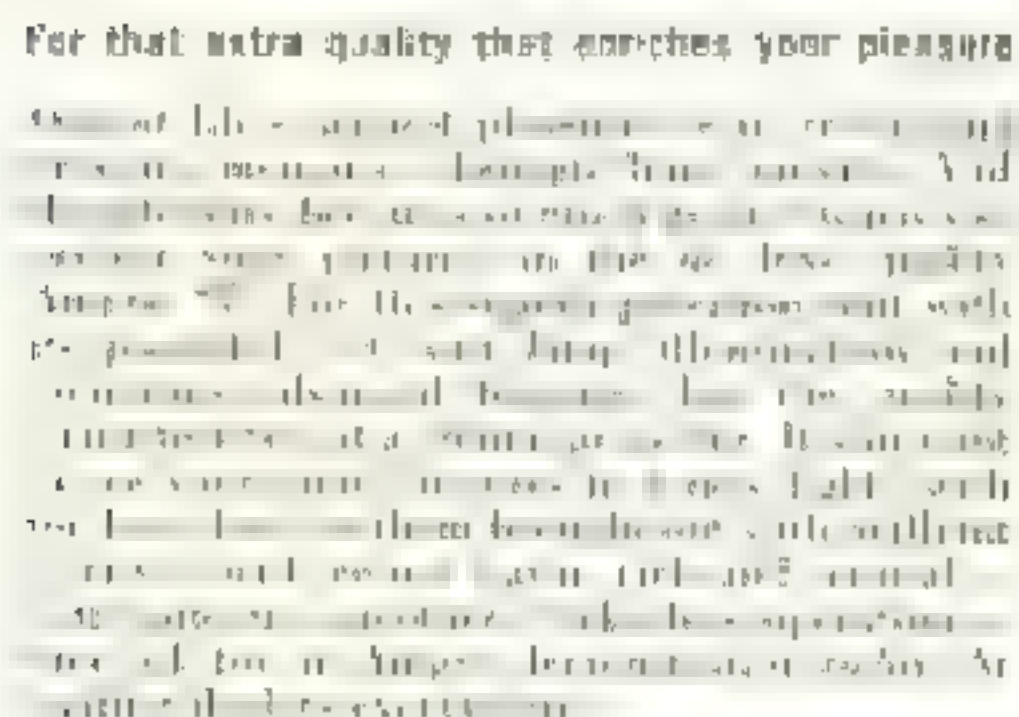
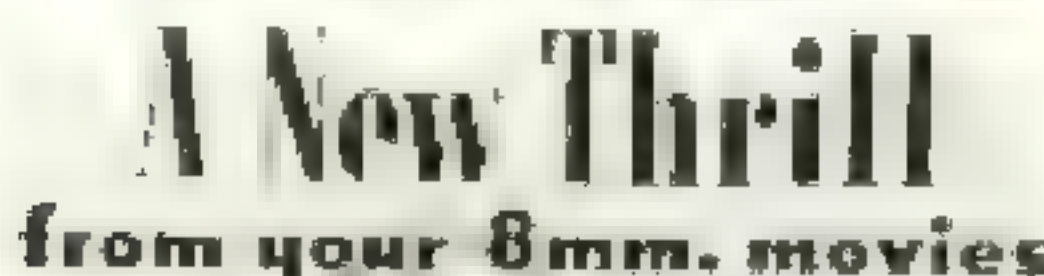
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^{***}Winnipeg, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 267

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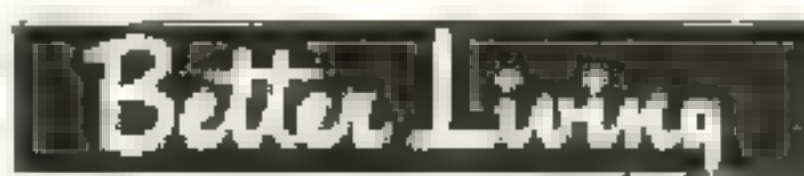
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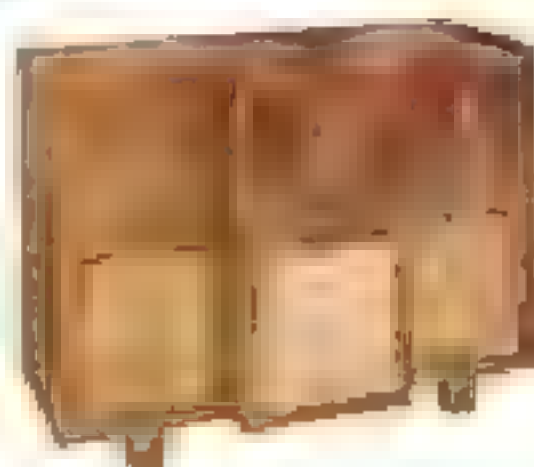
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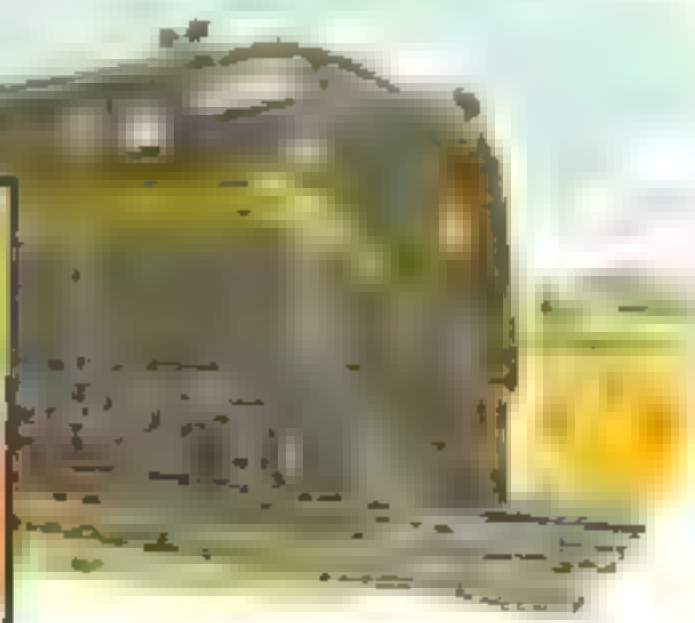
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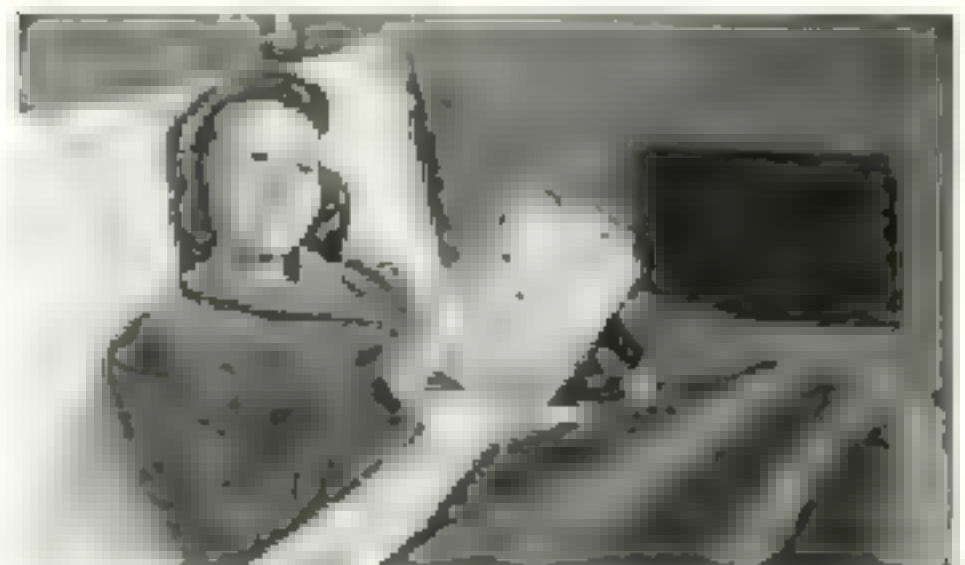


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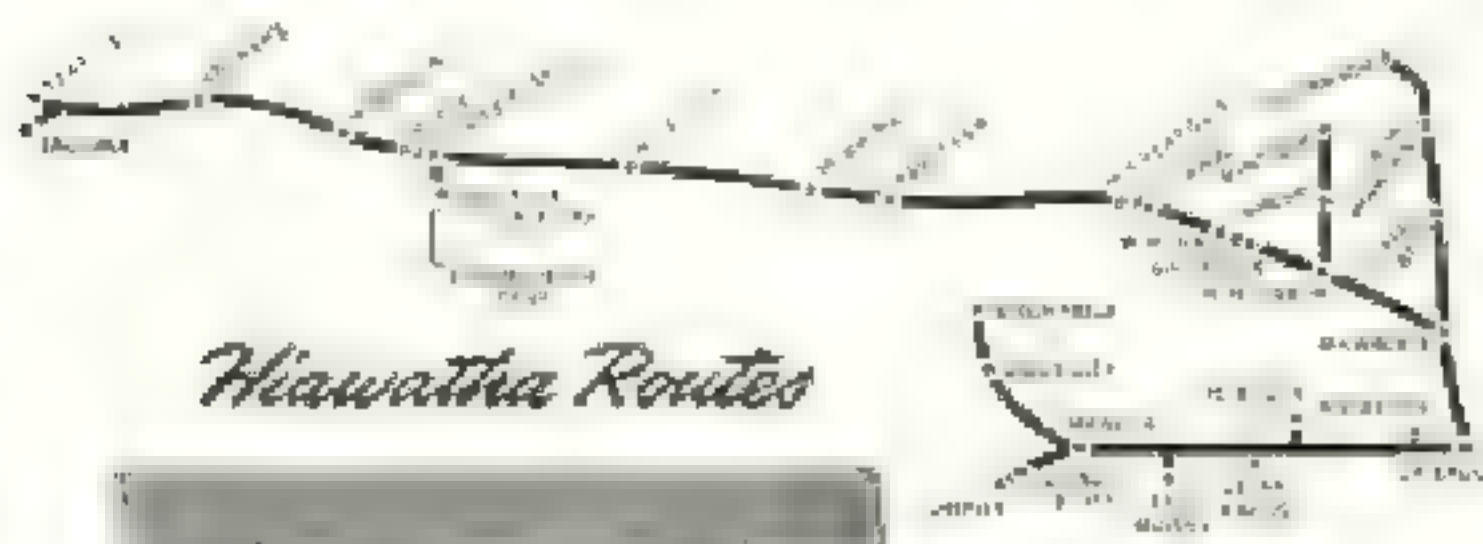
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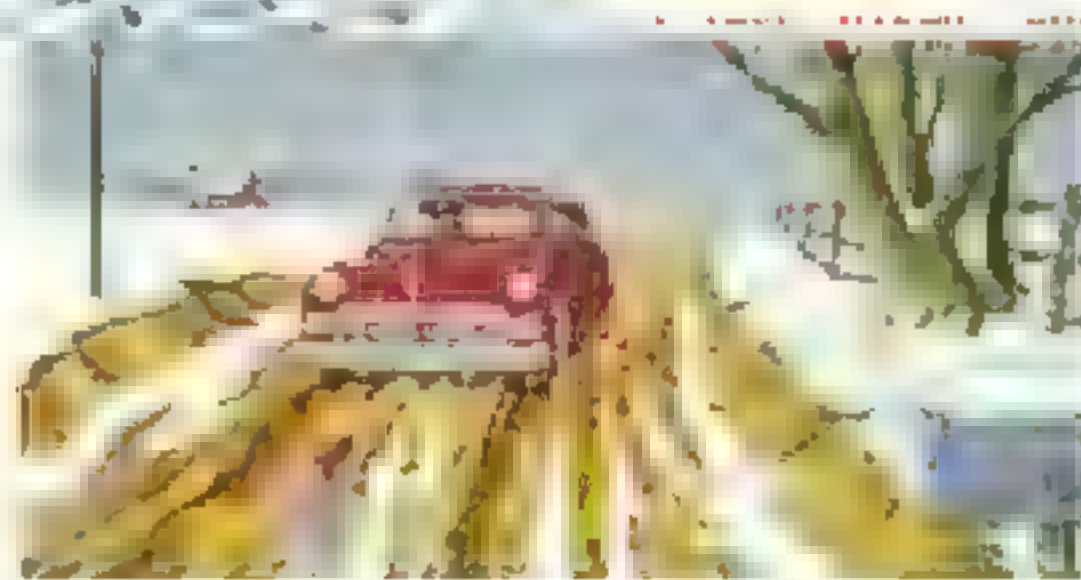
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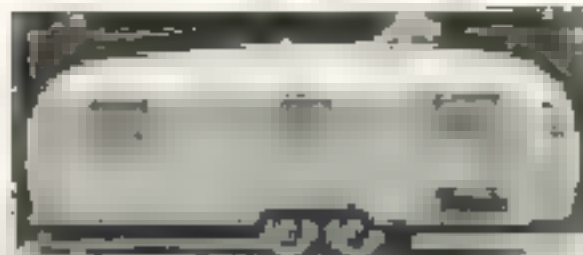
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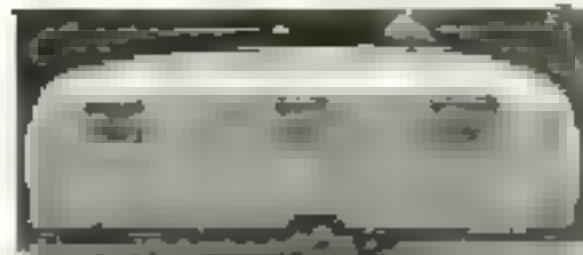
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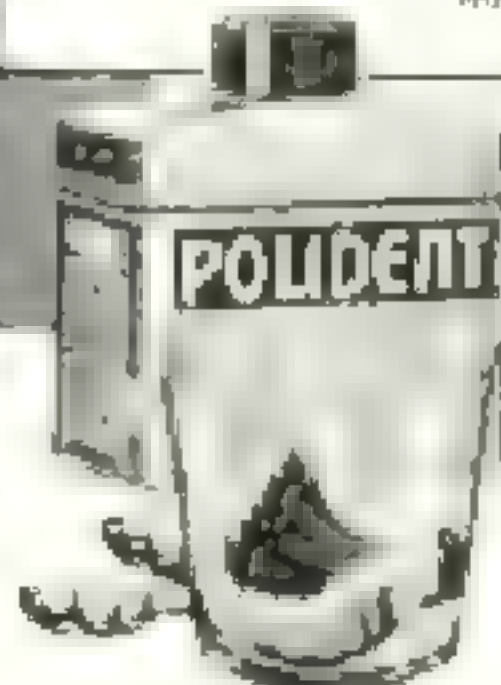
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often is only a minor discomfort due to improper habits of eating and drinking, nervousness, fatigue, and emotional strain.

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So, if you have “indigestion” frequently, you should see your doctor. Remember

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When the digestive system fails to function properly, “indigestion” usually results. Fortunately, this condition can generally be corrected by following a few common sense rules, under the guidance of your physician. He may suggest changes in your diet, eating moderately, keeping in good physical condition, and avoiding mental or emotional stress.

When you feel that you have “indigestion,” prompt diagnosis and treatment are essential. For example, if you are suffering from indigestion, it is a good idea to consult your physician for better control of physical diseases of the digestive system. In certain types of indigestion, doctors are finding psychotherapy

increasingly important.

If you have frequent attacks of “indigestion,” don’t try to be your own doctor. The continued use of home remedies may do more harm than good, and may delay the start of proper medical care.

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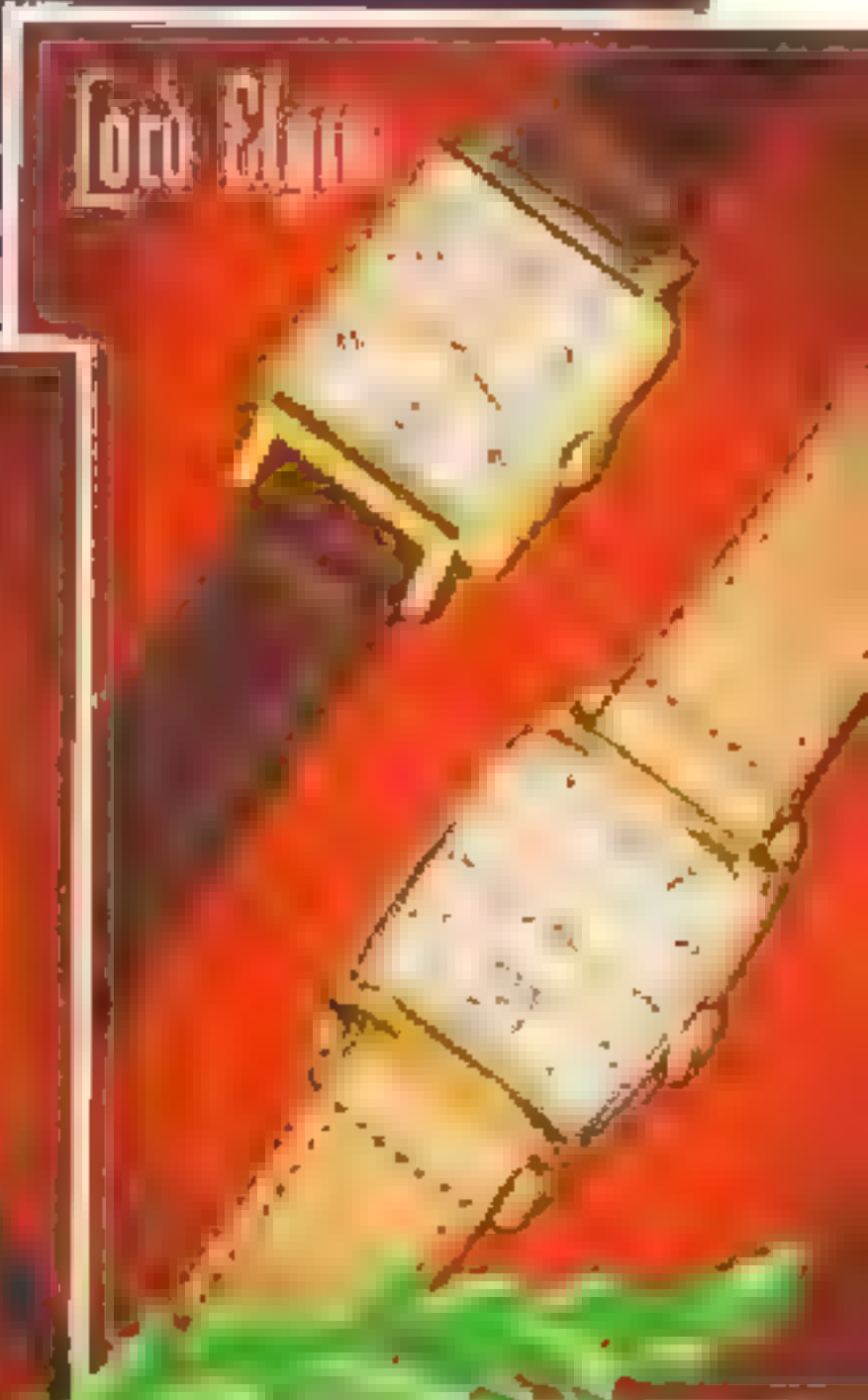
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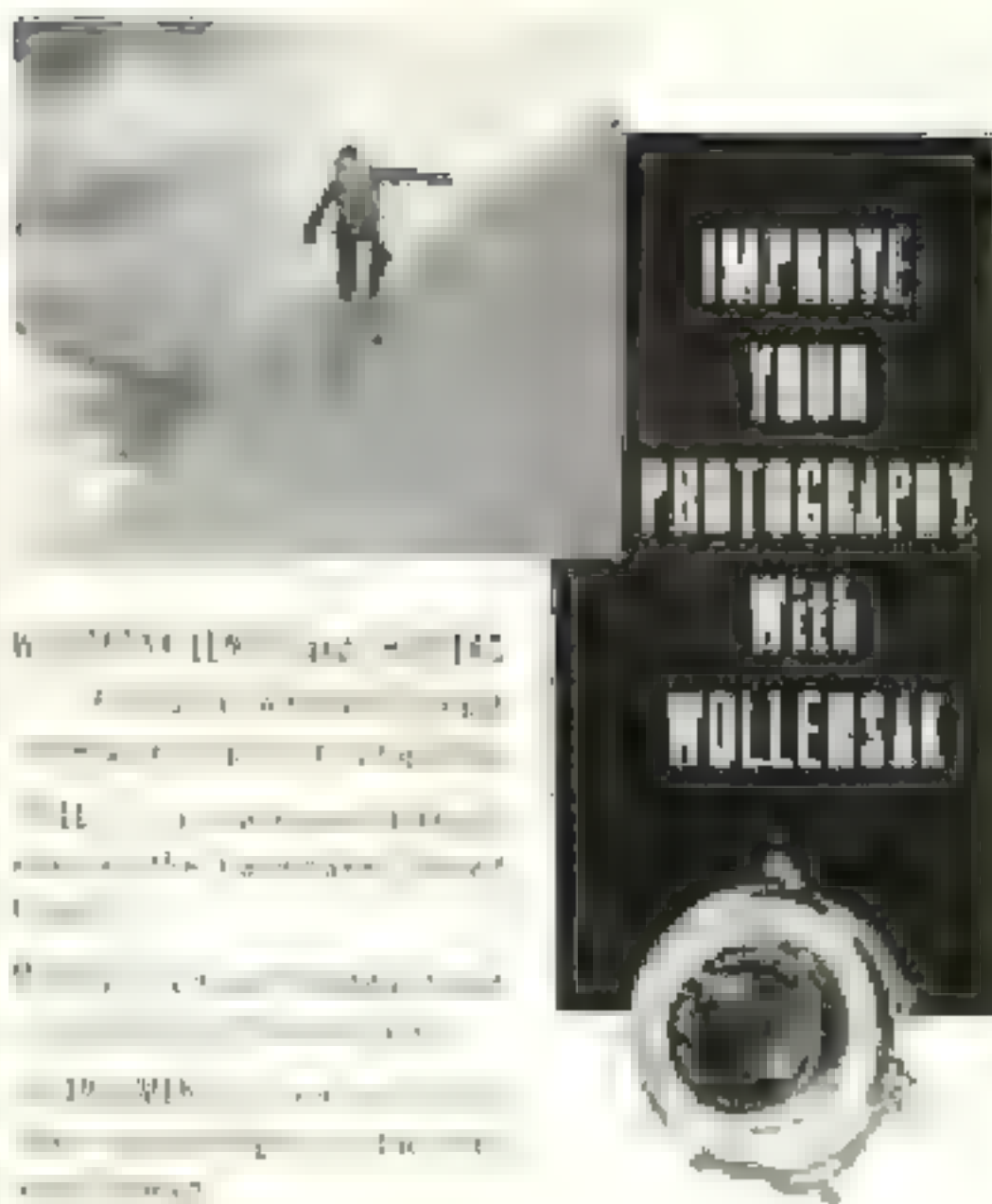


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Principles

11. The following table shows the number of people who attended the 2000 Summer Olympics in Sydney, Australia, by country.

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 2. \mathcal{A} is a σ -algebra if:
 (a) $A \in \mathcal{A} \implies A^c \in \mathcal{A}$ (closed under complementation).
 (b) $A_1, A_2, \dots \in \mathcal{A} \implies \bigcup_{i=1}^{\infty} A_i \in \mathcal{A}$ (closed under countable unions).
 (c) $A_1, A_2, \dots \in \mathcal{A} \implies \bigcap_{i=1}^{\infty} A_i \in \mathcal{A}$ (closed under countable intersections).
 (d) $\emptyset \in \mathcal{A}$ and $X \in \mathcal{A}$.

1. The first step is to identify the problem. This involves understanding the current situation and the goals that need to be achieved.

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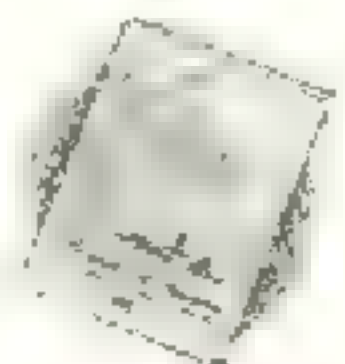
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Remington Rand

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